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THE ORIGIN OF CANCER IN MAN

WILLIAM CRAMER, M.R.C.S., D.Sc., PH.D.

ST. LOUIS

The title of my paper might be expressed more simply by the question Why does a patient get cancer? This is a question which must have come often to your mind. If a patient presents himself or herself at an early stage of the disease when the growth is still small, the feeling or the seeing of a tumor may have been the very first sign of the disease. There may be no other symptoms, not even pain, the patient is apparently in good health, there is no previous history of any disease or trauma: the disease appears like a "bolt from the blue."

The early workers in cancer research laboratories had the same experience. They kept large numbers of young mice or of rats together in big cages on the same diet. After a while one of these animals, which had never been subjected to any experimental procedure, would suddenly develop a malignant growth, then in a second and later perhaps in a third animal a tumor would appear, while the bulk of the animals, though kept under identical conditions in the same cage and on the same food, would complete the natural span of their lives free from cancer. It was thus taken for granted that cancer arises suddenly in a previously normal tissue, and it was this sudden, unexpected and apparently capricious appearance of the disease which gave to it the aspect of a grim mystery. It also gave rise to the conception that the origin of cancer was to be found at the time of the first appearance of a malignant cell.

The attention of students of cancer thus became riveted on the investigation of the nature of the malignant cell as the one and only problem in the etiology of cancer, which became limited to an explanation of the unrestricted growth of the cancer cell. Since it was proved conclusively by the early work on the transplantation of spontaneous tumors in animals that this unrestricted growth was due to a change lying entirely within the cell and was not brought about by growth stimuli acting on the cancer cell from without, the solution of the cancer problem seemed to be confined to an explanation of this intracellular change. And since it seemed justifiable to assume that this intracellular change is the same in whatever tissue or organ it occurs, cancer appeared to be, from the etiologic point of view, a single disease and the nature of this intracellular change was spoken of as "the cause of cancer." Various lines of attack on the nature of this intracellular change have been followed, but this problem still awaits a solution. What has completely changed the aspect of the cancer problem and opened up new ways and means of attacking it is the recognition that cancer does not arrive suddenly and that the intracellular change represents only one aspect of a very complex problem.

One of the characteristic features of the disease is its age incidence: cancer increases rapidly in almost geometrical progression as age advances. This was explained formerly by the assumption that senile tissues are particularly prone to the cancerous change. When it became possible to produce cancer experimentally, by a variety of carcinogenic agents, it was found that cancer can be induced as readily in a young organism as in an old one. The senility of an organism does not, therefore, account adequately for the characteristic age incidence of the disease. The explanation must be sought elsewhere. It lies in the fact that the intracellular change represents the culmination of a process which occupies a long period of time. This period—the period of induction—is not the same for different species of animals if expressed in units of astronomical time. But there is a striking similarity if we express the results in units of biologic time; that is to say, in equal fractions of the natural life span of each species. The production of cancer by coal tar requires on the average six months in a mouse and fifteen years in man. With a life span of two years for a mouse and seventy years for man, six mouse months represent one fourth of the life span of a mouse and fifteen human years nearly one fourth of the life span of man. During this long period of induction the tissue on which the carcinogen acts undergoes a series of pathologic changes involving among other things increased cell division. Eventually this altered tissue passes into a condition in which a few cells within this altered tissue undergo, sooner or later, an irreversible intracellular change which transforms them into malignant cells. When this happens, the scene changes from the exterior to the interior of the cell.

THE ORIGIN OF CANCER: PROXIMATE AND REMOTE CAUSES OF CANCER

The irreversible intracellular change, when it has once occurred, persists within the cell even after the carcinogenic agent has been withdrawn. The recent work on experimental carcinogenesis has thus in no way changed the fundamental conception that the autonomous infiltrative growth of the cancer cell is a property residing within the cell. On the contrary, it has confirmed and extended it. But it has made

From the Barnard Free Skin and Cancer Hospital.

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Dr. Cramer is research associate, the Barnard Free Skin and Cancer Hospital, St. Louis, and late senior member of the Research Staff, Imperial Cancer Research Fund, London, England.

it clear that the expression "the cause of cancer," which was used previously, has become meaningless. As far as the birth of a new race of cells—the cancer cells—has its immediate origin in an intracellular change, this change may be called the proximate cause of cancer. But since this change occurs most frequently—if not always—in a tissue which has undergone pathologic changes as the result of having been exposed to the action of a carcinogenic agent, we must take account of this more remote origin of cancer by distinguishing the "remote causes" of cancer from the "proximate cause" or causes. Eventually, when more is known about the nature of the intracellular change, we may be able to understand the connection between these two problems. At present they have to be treated as two separate and distinct problems requiring a different technical approach and involving different biologic conceptions. The experimental study of the remote causes of cancer has made it possible to interpret a number of hitherto obscure features concerning the origin of cancer in man and to open up ways and means by which this problem can be attacked in the human subject. Since the etiology of cancer involves a consideration of a plurality of remote causes, the term "remote causal factors" seems preferable. These may be conveniently divided into four groups, which will now be discussed briefly. They are:

1. Carcinogenic agents.
2. The precancerous condition.
3. Susceptibility.
4. The time factor.

CARCINOGENIC AGENTS

The carcinogenic agents which have so far been identified differ greatly in their nature. They may be chemical substances, physical agents such as roentgen rays, radium rays or ultraviolet light rays, or gross parasites such as Taenia crassicolis in rats, Bilharzia in man. The chemical substances, of which about one hundred and seventy have been identified, fall into two groups: (1) substances foreign to the physiologic economy of the body and not formed by it normally and (2) substances normally formed by the body and possessing definite physiologic functions. Examples of the first group are tar, dibenzanthracene, benzpyrene and methylcholanthrene. These different chemical substances, which have a mildly toxic effect on the animal organism, vary greatly in their carcinogenic potency. They are locally carcinogenic for the skin when applied to it. When injected subcutaneously they are also locally carcinogenic for connective tissue. They also produce cancer locally at the site of their application in a number of internal organs, including the stomach, intestine and mamma. They may also produce cancer remotely in the lungs, either when applied to the skin or when injected subcutaneously. To this group belong also a number of organic dyestuffs, such as butter yellow, which when ingested with the food are specifically carcinogenic for one organ, the liver, but not for other organs. The fact that some of the chemical substances known to induce skin cancer in man, such as tar, shale oil and radiations, also induce skin cancer in mice and other species of animals is evidence of the essential similarity of the experimental disease to the disease as seen in man. Although a large number of chemical carcinogens have been synthetized, their mode of action is still obscure. A systematic investigation organized by Dr. E. V. Cowdry is now under way in the Barnard Hospital in St. Louis. One result obtained so far which has a bearing on the etiology of cancer in man is that the exposure of a tissue to the carcinogenic agent need not necessarily be long continued and unremitting, as has been generally assumed. A few isolated exposures to a powerful carcinogenic agent, separated from one another by long intervals of time, can be effectively carcinogenic.[1] Under special conditions even a single exposure of the skin to a chemical carcinogen is sufficient so to alter the epithelium as to send it on its way to the development of cancer.

In contrast to this group is the group of carcinogenic hormones, such as the estrogens. They are formed in the body and fulfil definite physiologic functions. They may be either the actual hormones normally present or organic substances having a different chemical constitution but possessing the same physiologic properties. This means that their carcinogenic effect is tied up with their physiologic action. They are specifically carcinogenic for a group of organs not exposed to agencies coming from without but influenced physiologically by these hormones, organs such as the mamma, the uterus, the prostate and the thymus. They are not carcinogenic for the skin.

Quite recently a number of facts have come to light which indicate that there is a fundamental difference in the mode of action of the chemical carcinogens on the skin and that of the estrogenic hormones on the mamma. The former, which, as already stated, are foreign to the physiologic economy of the body and have a mildly toxic effect on the organism, induce at their first application an injury to the cells of the skin followed by an excessive regeneration. The resultant epithelial hyperplasia is, therefore, an indirect effect. The estrogenic substances, on the other hand, induce a hyperplasia of the mammary epithelium as a normal response of a tissue to its physiologic chemical stimulus. The subsequent development of cancer in the mamma is dependent on the presence of a substance of a high molecular weight, the exact nature of which has not yet been identified. This substance is transmitted from its mother to the individual animal immediately after birth in the milk. This is the so-called "milk factor" of Bittner.[2] This milk factor is stated to be present only in strains with a high incidence of spontaneous mamma cancer; it is absent in strains with a low incidence.

While the presence of this milk factor is essential for the induction of cancer in the mamma by estrogenic substances, cancer can be made to develop in that organ in the absence of the milk factor if a chemical carcinogen such as methylcholanthrene is locally applied to the mammary gland. For Strong[3] has shown that by this technic cancer can be induced in the mamma of mice belonging to a strain in which breast cancer never develops spontaneously in the females and cannot be induced experimentally in the males by estrogens. Ex hypothesi, the milk factor is absent in such a strain. It follows from this that the origin of cancer in one and the same organ, the mamma, can be due to two widely varying combinations of remote causal factors.

But one fact stands out, whatever the combination of remote causal factors may be and whatever tissue they are allowed to act on a considerable period of time has to elapse before the action of these factors

1. Cramer, William, and Stowell, R. E.: Cancer Research **1**: 849, 1941.
2. Bittner, J. J.: Am. J. Cancer **36**: 44, 1939; J. Nat. Cancer Inst. **1**: 155, 1940.
3. Strong, L. C., and Williams, W. L.: Cancer Research **1**: 886, 1941.

on a given tissue culminates in the development of cancer. What occurs during that period? This leads directly to a consideration of the second item on our list.

THE PRECANCEROUS CONDITION

During the prolonged period of induction necessary for a carcinogenic agent to elicit cancer, the tissue on which these agents act undergoes a pathologic change, and it is in this altered tissue that eventually a malignant condition develops in a sharply circumscribed area. In the two tissues in which experimental carcinogenesis has been studied most extensively—the skin and the mamma—this alteration consists, as far as the epithelium is concerned, in hyperplasia, which in the skin becomes visible to the naked eye frequently, though not always, in the form of papillomas. But it must not be assumed from this that every form of hyperplasia is a precancerous condition or that a papilloma must necessarily develop into a carcinoma. There are, as we shall see, in man certain atrophic conditions of the epithelium which have been recognized as precancerous. The significance of the precancerous condition will be discussed again later.

THE HOST FACTOR OF SUSCEPTIBILITY

When carcinogenic agents are applied to the skin of animals, they do not produce their carcinogenic effect uniformly; in some animals cancer appears earlier than in others, and in some individuals cancer does not appear at all. These differences become even more well defined when estrogenic hormones, which are carcinogenic for the mamma, are applied to inbred strains differing in their spontaneous incidence of mammary cancer. The ovarian follicular hormone, which may produce 100 per cent of mammary cancer in the males of one particular strain with a high incidence of spontaneous mamma cancer in the females, may produce no carcinogenic effect at all in the males of another strain in which cancer never develops spontaneously in the mamma. There is, therefore, a factor residing in the host and transmitted to it from its parents which determines the efficacy of a carcinogenic agent. This factor is designated by the intentionally vague term susceptibility. By applying the methods of genetics [4] to the cancer problem it has been demonstrated among other facts that the factor of susceptibility does not extend to all organs of an individual but is restricted to one particular organ. Thus it is possible to produce by inbreeding a strain of mice with a very high incidence of spontaneous cancer of the mamma, indicating a high degree of susceptibility to cancer in the mamma. But the skin of the animals belonging to such a strain is not necessarily more susceptible to the carcinogenic action of a chemical carcinogen.

The relationship between the two factors susceptibility and carcinogenic agent can be expressed crudely by a simple equation of two variables, A and S, and a constant, C:

$$A \times S = C$$

In such an equation the one variable increases as the other diminishes. If A represents the carcinogenic agent, S the susceptibility and the constant C the carcinogenic effect, the equation expresses the fact that cancer can arise in an organism either with a high susceptibility and a weak carcinogenic stimulus or with a low susceptibility and a strong carcinogenic stimulus. The equation reads therefore

Carcinogenic Agent × Susceptibility = Carcinogenic Effect

4. Little, C. C.: A Review of Progress in the Study of the Genetics of Spontaneous Tumor Incidence, J. Nat. Cancer Inst. **1**: 727, 1941.

THE TIME FACTOR

There is yet a third variable which enters into the etiology of cancer, the factor of time. A considerable period of time is necessary for a carcinogenic agent to induce cancer even in a susceptible animal, and this prolonged period varies inversely with the strength of the carcinogenic stimulus and with the degree of susceptibility. It is shortest when a strong stimulus is applied to a highly susceptible animal, and it is very long when the two other variable factors have low values. This can be expressed by the equation:

Time (Carcinogenic Agent × Susceptibility) = Carcinogenic Effect

This means that the appearance of cancer at an early age indicates a strong carcinogenic stimulus or a high degree of susceptibility or a combination of the two. If, on the contrary, the carcinogenic stimulus has been weak or intermittent or/and if the degree of susceptibility has not been high, cancer will develop at later age periods. The longer the individual lives, the greater is the chance that a product of carcinogenic stimulus and susceptibility too weak to elicit cancer in early middle age will become effectively carcinogenic. This accounts for the rapid increase in the cancer incidence rate with advancing age.

THE ETIOLOGY OF CANCER IN MAN: CANCER A MULTIPLICITY OF DISEASES

Cancer in man may be considered as an experiment carried out by nature on the human species. But in this case we see only the end results of the experiment. In order to trace the various factors which have taken part in this experiment we must adopt a "follow-down system." The follow-up system, with which we are all familiar, enables us to determine the results of treatment. It tells us nothing about the origin of the disease. The follow-down system is only now beginning to be developed. It attempts to trace the disease in man back to its origins in the light of the knowledge gained from the experimental analysis of the disease in animals.

The first thing to bear in mind in such investigations is the great variety and variability of the etiologic factors. They are different for different organs, and even for one and the same organ there may be a variety of ways in which the several factors are present in combination. We must recognize that from the point of view of the remote causes cancer is a multiplicity of diseases in man as it is in animals. In order to trace the various etiologic factors, the vast bulk of data concerning human cancer has to be broken down into separate groups. I shall try to illustrate this point by discussing briefly the following groups:

Primary liver cancer.
Hereditary factors.
Social factors.
Precancerous conditions.
Gastric cancer.
The hormonal etiology of breast cancer.

PRIMARY CANCER OF THE LIVER

This disease is very rare in Europe and in this country. It is often found in the natives of the Far East and of South Africa,[5] and, where accurate statistical observations have been available, it has been found that the liver is the organ most frequently affected by cancer. This difference has until recently been a remarkable and puzzling phenomenon. Here is the explanation.

5. The literature is reviewed by Shear, M. J.: Am. J. Cancer **29**: 269, 1937.

Japanese investigators [6] found that primary liver cancer could be induced in mice and rats by adding certain azo dyes, such as butter yellow, to the diet. Such dyes are used in the artificial coloring of foodstuffs. When the experiments were repeated in European and American laboratories, liver cancer did not develop as readily or failed to appear altogether. Further investigation showed that this discrepancy was accounted for by the fact that the stock diet of the animals in Japan consisted of rice and carrots, while in European and American laboratories the stock diet was more varied and built around wheaten cereals as the basic foodstuff. This difference reflects of course general differences

TABLE 1.—*Proportionate Cancer Mortality in Sibs of Basal Patients with Cancer, Analyzed by Organs (Waaler)*

Percentage Incidence of Cancer in General Population		Lip		Other Sites				Stomach, Liver, Esophagus				Uterus, Breast and Ovaries		Prostate	
		B.P. ♂		B.P. ♂		B.P. ♀		B.P. ♂		B.P. ♀		B.P. ♀		B.P. ♂	
♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
17	17	17	17	23	22	22	32	32	33	24	30	23	37	46	9

B.P. = basal patient.

in the respective diets consumed by different races of man in different parts of the world. Further experimental analysis by Rhoads and his collaborators [7] demonstrated that the two dietetic factors responsible for the difference were casein and a vitamin—riboflavin—belonging to the B complex. When these two substances are added to a diet of rice and carrots, butter yellow does not induce liver cancer.

In the story of cancer research this recent analysis of the etiology of liver cancer is one of the most interesting chapters and it is worth while to consider it in some detail. We have here again two remote causes: a carcinogenic agent—butter yellow—and the susceptibility of the liver to that agent. But in this case the susceptibility factor is not inherited or transmitted from the parent but is dependent on conditions acting on the organism from without—namely the diet. We have here also a striking demonstration of the close similarity existing between the etiologic factors determining the development of cancer in man and in animals. It is true that we have not yet identified the carcinogenic agent responsible for the prevalence of primary liver cancer among the natives of the Far East, but the dietary factor predisposing the liver, and only the liver, to the development of cancer is the same for rats and for human beings. It is therefore justifiable to conclude that liver cancer, as it occurs among the natives of the Far East, can be prevented by dietetic measures.

FAMILIAL INCIDENCE OF CANCER IN MAN

When this subject was first studied, the total incidence of cancer of all organs was made the basis of all investigations. For reasons which will become evident, such investigations failed to reveal any pronounced differences of the cancer incidence between persons with and persons without a family history of cancer.

In two more recent investigations carried out independently by Wassink [8] in Amsterdam and by Waaler [9] in Norway the material collected by them was further analyzed according to the organ incidence. Since these two investigations are not readily accessible they will be discussed in some detail.

The basis of the material used for such investigation were persons known to suffer or to have suffered from cancer of the various organs. These are called the "basal patients." The next step was to collect information about the incidence of cancer in the near relatives of the basal patients: either the brothers and sisters—"sibs" for short—or brothers, sisters, parents, aunts and uncles. It thus became possible to determine first whether the near relatives of persons with cancer of the one organ develop cancer more frequently than does the rest of the population (table 1).

The figures show that the sibs of male basal patients with lip cancer do not suffer from cancer more frequently than the general population. There is a definite increase for the sibs of basal patients with cancer of the esophagus and stomach, and in this group there is a definite sex difference, the brothers of female patients with cancer of the esophagus or stomach showing the lowest frequency in this group. A remarkably high incidence is found among the sisters of basal female patients with cancer of the female sex organs but not among the brothers, and among the brothers of basal male patients with cancer of the prostate but not among the sisters. A second important finding was that, in this population of sibs, cancer developed at a much earlier age (table 2).

The next step was to see whether the organ incidence in the cancerous relatives of basal patients suffering from cancer of one particular organ, e. g. the mamma, was the same as it is in the general population, which would indicate a general susceptibility to cancer of all organs, or whether it was different from that of the general population. Waaler found that in cancer of the mamma an inherited susceptibility affects mainly the female relatives (as seen in table 1) and in those female relatives mainly the "homotope organ"—the mamma (table 3).

TABLE 2.—*Proportionate Cancer Mortality in Sibs of Basal Patients with Cancer, Analyzed by Age Groups (Waaler)*

	Males in Age Groups					Females in Age Groups				
	40-	50-	60-	70-	80-	40-	50-	60-	70-	80-
General population.....	11	20	22	14	5	16	22	21	12	5
Sibs.....	16	42	27	18	5	49	47	35	18	5

That is to say, among 100 cancerous women who had a sister afflicted with cancer of the breast—the basal patients—45 women would have cancer of the breast; while in 100 cancerous women whose sisters—the basal patients—had cancer in some organ other than the mamma, only 16 women would have cancer of the breast. This proportion (16 per cent) of breast cancer in the total organ incidence approximates that found in the general female population.

A strikingly similar result was obtained by Wassink in the Netherlands (table 4).

This table is given here because it illustrates another important point, namely the chance of a development of cancer incurred by the close relatives of basal patients with breast cancer. This is a question frequently asked by relatives of cancer patients. In Wassink's material there are 660 women as basal patients with breast can-

6. Sasaki, T., and Yoshida, T.: Virchows Arch. f. path. Anat. **295**: 175, 1935.
7. Kensler, C. J.; Sugiura, K.; Young, N. F.; Halter, C. R., and Rhoads, C. P.: Science **93**: 308, 1941. Sugiura, K., and Rhoads, C. P.: Cancer Research **1**: 3, 1941.
8. Wassink, W. F.: Genetica **17**: 103, 1935.
9. Waaler, G. H. M.: Ueber die Erblichkeit des Krebses, Norske Videnskaps Akademi i Oslo, 1931.

cer. Only 207 of these women had a history of cancer in other members of the family, so that as many as 453 of these basal patients had no relatives with cancer of any organ. But in the 207 basal patients with cancerous relatives the incidence in the relatives of breast cancer was remarkably high. Among the 192 cancerous female relatives more than one half had breast cancer, namely 112 women, while in the general population of Dutch women breast cancer affects only about 10 per cent of all cancerous women.

These relationships, observed in the human subject, harmonize remarkably well with those arrived at from the experimental side. For sites such as the lip or the skin, sites exposed to agencies acting from without, the incidence of cancer is predominantly determined by the absence or presence of a carcinogenic agent coming from without—the "exogenous carcinogenic agents." For organs not exposed to the same extent to agencies acting from without but subject to hormonal influences leading to carcinogenesis, such as the mamma and the uterus—the "endogenous carcinogens" as we may call them—the incidence of cancer is governed largely by intrinsic factors of susceptibility. For such organs as the esophagus and the stomach, which are exposed to agencies coming from without, the development of cancer depends on both factors: the presence of exogenous carcinogenic agents and the existence of an intrinsic inherited susceptibility, of which either the one or the other may predominate.

TABLE 3.—*Percentage Cancer Incidence in Homotope and Heterotope Organs in Sisters*

	Of Basal Patients with			
	Cancer Other Than		Cancer of	
	Mamma	Uterus	Mamma	Uterus
Cancer appeared in 100 cancerous sisters in				
Mamma	16	—	45	—
Uterus	—	8	—	35

We have just seen how the incidence of cancer is affected in a population selected in such a way that the intrinsic factor of susceptibility predominates. How can we go about to select a population in which the incidence of cancer is governed by the presence of exogenous carcinogenic agents? This brings us to the next section.

SOCIAL FACTORS IN CANCER

For organs exposed to carcinogenic agents coming from without, "exogenous carcinogens," the incidence of cancer is determined largely by the presence or absence of the exogenous carcinogens. This is clearly demonstrated by occupational cancers. Cancer of the scrotal skin is rare among the general population but relatively frequent among the chimney sweeps and among the cotton spinners in England, who are exposed to the mineral oil used for lubricating the spindles, the so-called "mule spinners' cancer." In these occupations the carcinogen induces scrotal cancer. It does so only in a fraction of the individuals exposed to the carcinogenic agent, namely in those persons with a high susceptibility to skin cancer; but even these persons would not have developed scrotal cancer if they had not engaged in those particular occupations. The occupation determines the incidence. A statistical analysis carried out nearly twenty years ago by Stevenson,[10] chief medical officer to the registrar general of England, has demonstrated that this relationship extends far beyond the skin and beyond occupational cancer and applies also to the upper part of the alimentary tract. His analysis was carried out on the male population in England, which he divided into five social classes. Studying the cancer incidence for a number of separate organs, he found that in the organs exposed to exogenous carcinogens, which in addition to the skin include the alimentary tract from the mouth down to and including the stomach, the cancer incidence was highest in the lowest social class and fell with a regular diminution through the other social classes to show the lowest incidence in the highest social class. In the group of organs not exposed to agencies coming from without, a group which includes the lower alimentary tract, the incidence of cancer was approximately equal in the different social classes. These results are important both from theoretical and from practical points of view. They show as a general proposition that the etiologic factors concerned in cancer of the upper alimentary tract are different from those operative for the lower alimentary tract. Their practical importance lies in the inference that the high incidence of cancer of the upper alimentary tract is related to the mode and habits of life of the lower social classes. This relationship may be called "social cancer." I have said earlier that cancer in man is an experiment carried out by nature on man. But occupational cancer is really an experiment carried out by man in his ignorance on himself. When the study of experimental carcinogenesis demonstrated the fact that in some occupations man exposed himself to chemical substances which were carcinogenic for the skin of animals, occupational cancer became a preventable disease. Social cancer is also an experiment carried out by man in his ignorance on himself, and with increasing knowledge of the exogenous factors involved it should, like occupational cancer, become a preventable disease.

We have here another example of the value of breaking up the available data concerning human cancer into groups if we wish to obtain an insight into the remote causal factors determining the incidence of cancer in man. Previous investigations on the incidence of cancer in different social classes had failed to yield differences which statisticians considered to be significant. But when each site is considered separately a definite relationship comes to light.

TABLE 4.—*Incidence of Cancer of All Organs and of Breast in Relatives of Patients with Breast Cancer (Wassink)*

Number of basal patients with breast cancer		660 females
Number of these basal patients having relatives with cancer		207 females
Number of relatives with cancer of all organs		301
Females	192	
Males	109	
Number of relatives with breast cancer		112 females
Number of relatives with cancer of organs other than breast		189
Females	80	
Males	109	

Social cancer affords a clue to the nature of the etiologic factors for cancer of these sites. It even suggests the possibility of preventing the disease. If the mode and habits of life of the lower social classes could be corrected so as to bring them up to the standard of the higher classes, it is justifiable to expect that a considerable diminution in the incidence of cancer of the upper alimentary tract would result.

10. Stevenson, T. H. C.: Registrar General's Decennial Supplement, England and Wales, 1921; Part II, London, 1924.

This would apply also to the stomach. Cancer of the stomach is responsible in most European continental countries for one half or more of the total cancer mortality. In this country it can be estimated to kill on the average 150 persons every day of every year. It presents a problem which cannot be easily investigated in animals, because in almost all species of animals gastric cancer is very rare and it has been difficult up to now to induce it experimentally with any degree of regularity. For investigations on the etiologic factors we are, therefore, dependent at present mainly on clinical and pathologic observations on man. For such investigations the conception of the existence of precancerous conditions on the basis of which cancer develops has been particularly helpful. Before discussing the etiologic factors for cancer of the stomach in man, I shall have to consider briefly the general meaning of the precancerous condition.

PRECANCEROUS CONDITIONS IN MAN

Let me recall that, when a carcinogenic agent is allowed to act on a tissue, a considerable period of time elapses before the development of a malignant condition manifests itself. During the prolonged preparatory period the tissue undergoes a pathologic change.

The conception of a precancerous condition is not new. It was first formulated many years ago by dermatologists for certain pathologic skin conditions and it was then defined as a condition in which cancer arises subsequently with a high degree of frequency. For man that definition still holds good. In human cancer it is, necessarily, a purely empirical definition and is not based on morphologic criteria, as is cancer itself. It is easy to understand why it should have been formulated by dermatologists. For in the skin the whole process of carcinogenesis is visible to the naked eye. It was later recognized also for some other organs visible to inspection, such as the tongue or the vulva. But these examples were considered by many as pathologic curiosities and not as visible examples of a general phenomenon preceding cancer. In fact, such a generalization has been contested even in recent years—and sometimes contested with some heat—by writers who claimed to speak with authority on cancer. But since it has been demonstrated experimentally that carcinogens, to produce their effect, require a prolonged period of time during which the tissue on which they act undergoes a series of pathologic changes, and since, as explained previously, the characteristic age incidence of spontaneous cancer in man and in animals finds an explanation in this long period of induction, the existence of a precancerous condition has established itself as a fairly general phenomenon in the origin of cancer. It has encouraged clinicians and pathologists to search for such conditions in different organs.

It should be noted that the precancerous condition is not necessarily represented by an epithelial hyperplasia, as in experimental skin cancer. It may be an epithelial atrophy. There are quite a number of atrophic conditions which have been found empirically to be precancerous, such as radiation dermatitis, kraurosis vulvae and the atrophic undescended testicle. Whether an epithelial hyperplasia as such or an epithelial atrophy as such are precancerous depends on the conditions by which they were produced. In the gastric mucosa three precancerous conditions have been identified: one, a gastric polypus, is hyperplastic; the two others are atrophic in nature—a gastric ulcer and chronic atrophic gastritis.

THE ORIGIN OF CANCER OF THE STOMACH

The stomach is in man the organ most frequently affected by cancer. In this country about 30 per cent of the total recorded mortality from cancer is represented by the recorded mortality from gastric cancer. I intentionally use the expression "recorded mortality," because there is reason to believe that gastric cancer is grossly underdiagnosed and that the actual incidence of gastric cancer is much higher. I also use intentionally the terms "mortality from gastric cancer" and "incidence of gastric cancer" as synonymous in order to bring home the fact that the percentage of patients with gastric cancer that are cured by operation is depressingly low. Even in the best clinics it does not exceed from 3 to 5 per cent of all patients. These unsatisfactory results have engendered in the medical profession a pessimistic outlook on the disease. But in view of the outstanding frequency of this form of cancer it is clear that we cannot hope materially to diminish the total cancer mortality unless there is an improvement in the results of the treatment of gastric cancer, and there are now reasons for a less pessimistic outlook. In making this statement I do not presume to offer a personal opinion. I rely on statements made by men better qualified by personal experience to judge than I am. I refer particularly to the views expressed at the recent conference on gastric cancer organized by the National Advisory Council on Cancer in October 1940 and reported in the *Journal of the National Cancer Institute* in February 1941 and to the monograph by E. M. Livingston and G. T. Pack "End Results in the Treatment of Gastric Cancer," published in 1939.[11] Briefly summarized, the argument runs as follows: Gastric cancer can be cured in from 30 to 40 per cent of those cases which come to the surgeon at a stage when the disease is operable and before wide dissemination has occurred. This amounts at present to about 15 per cent of all cases of gastric cancer diagnosed as such. Gastric cancer is admittedly difficult to diagnose at this stage, and the low percentage of successful treatment is due mainly to the fact the great majority of patients—about 85 per cent—reach the surgeon at a stage at which the disease has become inoperable. On this point Livingston and Pack have this to say: "The medical practitioner, the consultant and the radiologist may play precisely as great a practical role as the expert surgeon through their influence on the most important single item, that of high operability rates." And again: "The operability rate among patients with gastric cancer may be looked upon as an index of medical efficiency in the management of the disease. The role of the medical practitioner equals or even exceeds the importance of the role of the skilled surgeon." One reason for a more hopeful outlook is the improvement in modern methods of diagnosis. A second reason is the possibility of recognizing the existence in patients of precancerous conditions. A third reason is the significance of a family history of gastric cancer. The question may be raised whether the recognition of a precancerous condition in the gastric mucosa of a person with a family history of gastric cancer should not justify immediate surgical intervention. Lastly there is the fact that carcinomas of the gastric mucosa vary greatly in their tendency to metastasize, so that some types of gastric carcinoma may reach a considerable size before they develop metastatic growths.

11. See also Cooper, W. A.: The Problem of Gastric Cancer, J. A. M. A. **116**: 2125 (May 10) 1941.

The importance of the pathologic conditions in the gastric mucosa which may lead to cancer raises the question of their etiology. A chronic atrophic gastritis, which is the condition most frequently preceding cancer, may be brought about by a variety of conditions. They can be summarized as chemical, mechanical or biologic insults to the gastric mucous membrane. An example of a biologic insult which may be an etiologic factor in gastric cancer is represented by defective oral hygiene or, in plain English, a "dirty mouth." This leads to defective mastication and to the continued swallowing of infected matter. These considerations rob the etiology of cancer of the stomach of the mystery which has been believed to surround it, and they direct attention to factors which are so frequent and familiar that they might be called banal. It is probably this group of etiologic factors which is responsible for "social cancer," i. e. the higher incidence among the lower social classes of cancer of the upper alimentary tract. In most people these insults to the gastric mucous membrane will not go beyond an atrophic gastritis or possibly an ulcer, but in individuals with an inherited susceptibility to gastric cancer they eventually induce cancer. There is so far no convincing statistical evidence that the excessive consumption of alcohol is an important factor in inducing gastric cancer, but Wassink has brought evidence that it is of etiologic significance for the pharynx and esophagus.

A HORMONAL ETIOLOGY OF CANCER OF THE MAMMA AND OF SOME OTHER ORGANS

The discovery that cancer can be induced by a number of chemical substances foreign to the physiologic economy of the body—that is to say, substances not formed by the body—has made it possible to understand the development of cancer in man in such an organ as the skin, which is exposed to agents coming from without. But how does cancer arise in organs not so exposed? A hormonal etiology of cancer of the breast was first predicated by Leo Loeb [12] twenty-three years ago. It has been demonstrated experimentally for organs, such as the mamma, the uterus and the thymus, that substances formed in the body and having hormonal functions may be carcinogenic for these organs. At first sight the fact that a hormone can induce cancer seems startling. But on consideration it solves a difficulty. That cancer can be induced in the exposed sites by the action of carcinogenic agents which play no part in the physiologic economy of the organism is easy to understand. The difficulty was to conceive how cancer can arise in organs and tissues not accessible to the action of such exogenous carcinogenic agents. The experimentally established fact that a substance formed in the body and circulating in the blood stream is carcinogenic for at least some of these unexposed organs, the mamma, the uterus, the prostate and the thymus, resolves this difficulty. But it raises at the same time a new problem. If a hormone can act as a carcinogen for a certain organ, why does not cancer develop in every individual?

We know that the strength of the carcinogenic agent —in this case the estrogenic hormone—is one factor. Observations on different strains of mice give no evidence that the females of the high cancer strains secrete more estrogen than those of low cancer strains. But the estrogenic hormone of the ovary is functionally integrated with the hormones of the other endocrine organs.[13] Some of these act synergistically, e. g. a hormone from the adrenal cortex, others antagonistically, e. g. a hormone from the anterior pituitary. As a result of this endocrine integration, alterations in the functional activity of some endocrine organs other than the ovary may lead to an endocrine imbalance either in the direction of reinforcing the action of the estrogen or in the opposite direction of antagonizing it. In the maintenance of this endocrine balance for the female sex hormone the pituitary gland and the adrenal glands take a leading part. Adrenalectomy makes the animals resistant to the effect of the estrogenic hormone.[14] Ovariectomy, if performed at birth, leads after a long time interval to a nodular hyperplasia of the adrenal cortex in strains of mice with a high incidence of spontaneous breast cancer but not in low cancer strains. The adrenocortical hyperplasia is followed by development of the mamma which may proceed to cancer.[15] A remarkable feature of this phenomenon is that it applies also to male animals, in which castration soon after birth may lead to a nodular hyperplasia of the adrenal cortex and even to mammary cancer.[16] It is conceivable, then, that a disturbance of the endocrine balance in a direction enhancing the functional activity of the estrogenic hormone, such as an adrenal cortical adenoma, may be an etiologic factor for breast cancer. The association of such changes in the adrenals with spontaneous mammary cancer in animals has been recorded by Bagg [17] in rats and by Greene [18] in rabbits. Instead of a cortical hyperplasia, a degeneration of the adrenal medulla has been found to be associated in some strains with a high incidence of breast cancer.

COMMENT

This is only a brief outline of the various etiologic factors concerned in breast cancer. But it is sufficient to show that a new field for clinical and pathologic observations has been opened. The presence of a family history of breast cancer is an extremely valuable aid in the early diagnosis, especially when the clinical or pathologic evidence is doubtful. Another problem of practical importance requiring solution is the question whether patients with breast cancer and a family history of breast cancer are more likely to develop a second primary tumor in the other breast. Further, a thorough examination of the adrenals and the pituitaries at autopsies of patients dead of breast cancer and with a family history of breast cancer may reveal a group in which there is an association between breast cancer and abnormalities of these endocrines.

CONCLUSION

I began this lecture by asking the question Why does a patient get cancer? We have been told often enough, even in recent times, that this question cannot be answered until the problem has been solved of the nature of the proximate cause of cancer—that is, the nature of the intracellular changes by which a normal cell is transformed into a cancer cell. This belief engenders a pessimism which hinders further progress. The point I have tried to make in this lecture is that there is no longer a central problem of cancer on the

12. Loeb, Leo: J. M. Res. **40:** 477, 1919.

13. A detailed discussion of these relationships may be found in Cramer, William: The Sex Hormones and the Endocrine Balance, Middleton Goldsmith Lecture, Bull. New York Acad. Med. **17:** 3, 1941.
14. Cramer, William, and Horning, E. S.: Lancet **1:** 192, 1939.
15. Woolley, G.; Fekete, E., and Little, C. C.: Proc. Soc. Exper. Biol. & Med. **45:** 796, 1940.
16. Woolley, G.; Fekete, E., and Little, C. C.: Endocrinology **28:** 341, 1941.
17. Bagg, H. J., and Hagopian, F.: Am. J. Cancer **35:** 175, 1939.
18. Greene, H. S. N.: J. Exper. Med. **70:** 147, 1939.

solution of which further progress depends. In fact, it is an error to think in terms of a central problem of cancer. From a correlation of the results obtained by the study of experimental carcinogenesis in animals with clinical and pathologic observations and with statistical investigations on cancer in man, it has become evident that there is a multiplicity of etiologic factors and that the etiology of cancer in man, as in animals, has to be considered as a separate problem for each organ.

In this way we are now beginning to trace cancer in man down to its various sources of origin. What is more, we are entitled now to consider the possibility of preventing several forms of cancer in man by attacking the disease at its origin instead of remaining on the defensive until the disease has attacked man. Further progress along these lines is possible by the same collaboration of the laboratory worker with those concerned with the study of cancer in man, which forty years ago established the curability of cancer in its early stage.

Washington and Theresa avenues.

RENAL CHANGES IN A CASE OF SULFADIAZINE ANURIA

H. A. BRADFORD, M.D.
AND
J. H. SHAFFER, M.D.
DETROIT

Early in the treatment of pneumonia with sulfapyridine and sulfathiazole, attention was drawn to the side effects of those drugs on the kidney. Complications involving the urinary tract have been caused by obstruction of the ureters, kidney pelves, calices and tubules by crystals of the acetylated form of the drug and secondly by toxic effects of the drugs on the kidney tissue. Changes noted in renal tissues were cloudy swelling and desquamation in the tubules.

Such changes were noted by Smith and Delaney,[1] who have recently reported 5 cases of pneumonia in which renal complications developed following treatment with sulfapyridine and sulfathiazole. Two patients

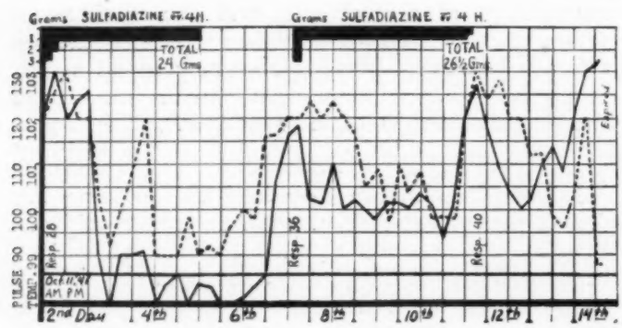

Fig. 1.—Clinical course of patient who received sulfadiazine for type III pneumococcus pneumonia.

failed to survive and came to postmortem examination. In the first instance sulfapyridine was administered. Pathologic examination of the kidneys showed definite degenerative changes confined largely to the convoluted tubules. The second patient suffered from chronic glomerulonephritis, contracted pneumonia and was treated with sulfathiazole. Postmortem examination showed cloudy swelling and desquamation in the tubules, in addition to those changes typical of glomerulonephritis. A third patient, a woman, suffered with anuria following sulfathiazole therapy. She recovered but

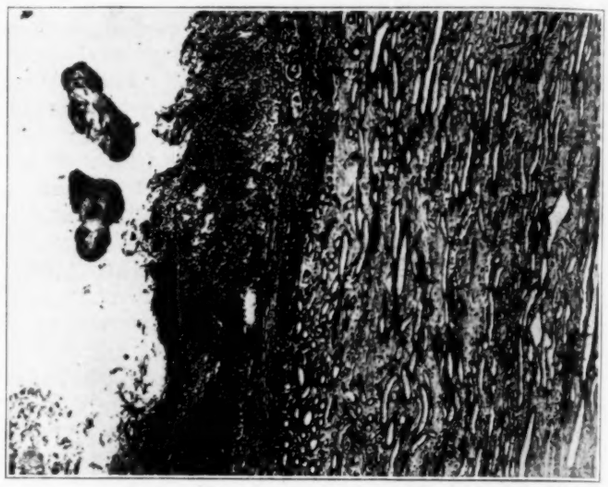

Fig. 2.—Sulfadiazine uroliths in the renal pelvis. Note ulceration of the adjacent pelvic epithelium with underlying zone of inflammatory reaction. Deposits of acetylated drug in the renal tubules in nearby area.

follow-up studies of the renal function suggested persistent evidence of minor tubular damage, although there was a complete restoration of glomerular function.

Early work on absorption, excretion and toxicity of the newer drug sulfadiazine by Feinstone,[2] Plummer[3] and others suggested that the drug would have the desirable qualities of sulfapyridine and sulfathiazole and at the same time fewer of the undesirable side reactions. Experimentally sulfadiazine was absorbed promptly after oral administration and gave relatively high blood concentrations; there was less acetylation and less toxic reaction on body tissue, especially in the urinary tract. The drug, moreover, was just as efficient as sulfapyridine and sulfathiazole in controlling infections caused by pneumococci. Sulfadiazine was found to leave the blood stream slowly; elimination was largely through the kidneys.

Although published reports have appeared in the literature of series of sulfadiazine treated pneumonia patients, only 2 instances of anuria following the use of the drug have been noted. In his series of 446 cases Finland[4] reported renal colic, hematuria and anuria in 1 case; the patient responded to ureteral catheterization. A second case of anuria following sulfadiazine therapy for infection of the urinary tract was reported by Thompson;[5] his patient also recovered following ureteral catheterization.

The following report is that of a patient who received sulfadiazine for type III pneumococcus pneumonia. Administration of the drug was followed by renal manifestations characterized by hematuria, albuminuria,

From the Department of Medicine, Henry Ford Hospital.

1. Smith, F. J., and Delaney, J. H.: Kidney Complications in the Chemotherapy of Pneumonia, Tr. Am. Clin. & Climatol. A. **57:** 1-12, 1941.

2. Feinstone, W. H.; Williams, R. D.; Wolff, R. T.; Huntington, Evelyn, and Crossley, M. L.: Toxicity, Absorption and Chemotherapeutic Activity of 2-Sulfanil-Amidopyrimidine (Sulfadiazine), Bull. Johns Hopkins Hosp. **67:** 427-456 (Dec.) 1940.

3. Plummer, Norman; Liebmann, James; Solomon, Saul; Kammerer, W. H.; Kalkstein, Mennasch, and Ensworth, H. K.: Chemotherapy versus Combined Chemotherapy and Serum in the Treatment of Pneumonia, J. A. M. A. **116:** 2366-2371 (May 24) 1941.

4. Finland, Maxwell; Strauss, Elias, and Peterson, O. L.: Sulfadiazine: Therapeutic Evaluation and Toxic Effects on Four Hundred and Forty-Six Patients, J. A. M. A. **116:** 2641-2647 (June 14) 1941.

5. Thompson, G. J.; Herrell, W. E., and Brown, A. E.: Anuria After Sulfadiazine Therapy, Proc. Staff Meet., Mayo Clin. **16:** 609-612 (Sept. 24) 1941.

sulfadiazine crystals in the urine, urinary suppression and azotemia followed by death. A pathologic study of the kidneys was obtained in this instance.

REPORT OF CASE

J. H., a Polish man aged 64, was admitted to the Henry Ford Hospital Oct. 11, 1941 and died October 23. For years he had suffered from bronchial asthma. He had remained at home for one week prior to admission because of fever, malaise and a cough productive of large amounts of thick yellowish phlegm. The day before admission the temperature rose to 104 F. and there was a chill with an associated pain in the anterior part of the chest.

The patient was slender and was obviously ill, with a temperature of 102 F., a pulse rate of 120 and a respiratory rate of 28. The lips and finger nails were cyanotic. His cough was productive of yellowish sputum. Examination of the chest showed impairment bilaterally over the lower lung fields with suppression of breath sounds; there were numerous moist rales. The blood pressure was 125 mm. of mercury systolic and 65 diastolic. The abdomen was moderately distended.

The admission leukocyte count was 23,000, with 91 per cent polymorphonuclear cells. The urine was the color of light straw with a specific gravity of 1.018 and contained a trace of albumin. Microscopic examination revealed 1 + finely granular and 2 + coarsely granular casts. Sputum examination by the Neufeld rapid method yielded numerous type III pneumococci.

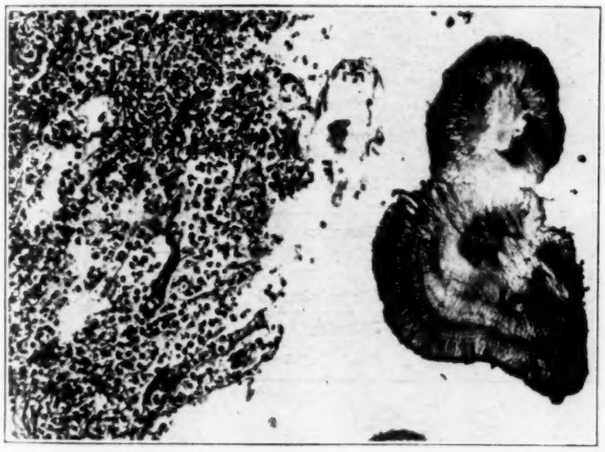

Fig. 3.—Section, under high power, showing ulceration of epithelial lining of renal pelvis adjacent to acetylated drug deposit in kidney pelvis. Note zone of intense inflammatory reaction with associated hemorrhage, necrosis and polymorphonuclear and small round cell infiltration.

The patient was started on sulfadiazine (fig. 1). He was given an initial dose of 3 Gm., followed by 2 Gm. in four hours, then 1 Gm. every four hours thereafter. On the third hospital day the blood sulfadiazine level was 8.6 mg. per hundred cubic centimeters and the temperature had returned to normal. Examination of the chest showed persistent impairment bilaterally with showers of medium moist rales in both impaired areas. The leukocyte count had decreased to 5,000. The urine contained 3 + sulfadiazine crystals and 3 + albumin. The blood nonprotein nitrogen was 34.5 mg. per hundred cubic centimeters. Because the temperature had returned to normal and because of the urinary conditions and low leukocyte count, sulfadiazine was discontinued; a total of 24 Gm. had been given.

On the fifth hospital day the leukocyte count had risen to 24,350 cells per cubic millimeter with 84 per cent polymorphonuclear cells. The temperature rose to 101.6 F. and there were physical signs of an extension of the pneumonic process in the right lung. Sulfadiazine was again started with an initial dose of 3 Gm., followed by 1 Gm. every four hours. When the patient had received 26.5 Gm. of the drug in the second course it was stopped because of an alarming decrease in the urinary output, as is shown in the accompanying table. The total amount of the drug given was 50.5 Gm.

The blood sulfadiazine level was 12 mg. per hundred cubic centimeters. The nonprotein nitrogen level had risen to 79 mg. per hundred cubic centimeters and the urine contained 3 + sulfadiazine crystals and 4 + erythrocytes. The patient was given supportive treatment including oxygen, dextrose and saline solutions intravenously and small blood and plasma transfusions. For forty-eight hours preceding death the urinary output ceased and the blood nonprotein nitrogen rose to 131 mg. per hundred cubic centimeters. The blood sulfadiazine level had dropped to 4.9 mg. per hundred cubic centimeters. Permission for pathologic study of the kidneys only was granted. Necropsy was performed one hour post mortem by Dr. M. O. Alexander.

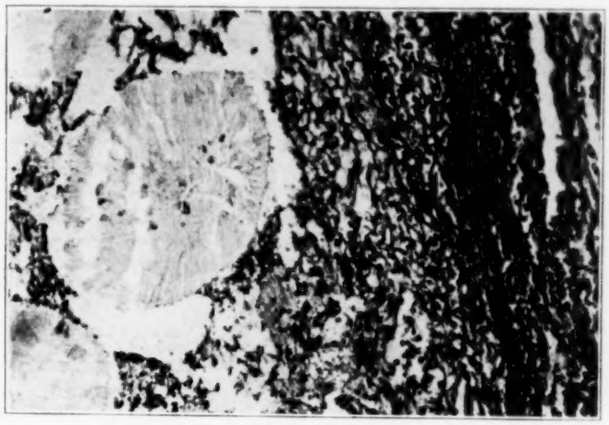

Fig. 4.—Section, under high power, showing uroliths deposited in kidney parenchyma.

PATHOLOGIC EXAMINATION

The right kidney weighed 290 Gm. and the left 305 Gm. The capsule of each kidney presented opaque areas but stripped with ease, showing smooth purplish surfaces except for a few small cysts. The cut edges rolled, indicating the presence of edema. The cortex of the right kidney averaged 8 mm. in width, that of the left 7 mm. The cortices and pyramids on each side were colored a light purplish gray, while the latter contained linear vascular striations. The renal pelves were not dilated and their lining surfaces were grayish red and congested. The pelves contained a large amount of light brown, gritty material which on analysis contained 92 per cent acetylated, 6 per cent free sulfadiazine and 6 per cent protein.[6] The bladder contained about 50 cc. of urine. The mucosa of the ureters and bladder appeared normal.

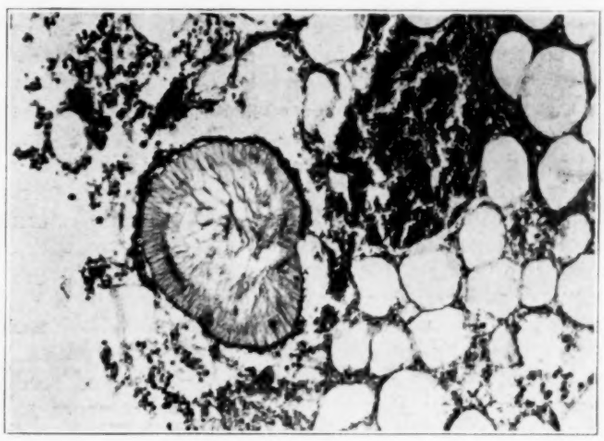

Fig. 5.—Sulfadiazine uroliths deposited in the peripelvic adipose tissue. Note dark zone of inflammatory reaction nearby.

On section the capsule showed no evidence of inflammatory reaction. The glomeruli appeared normal except for slight engorgement of the capillaries. The periglomerular space was

6. Chemical analysis on dry weight was done by the Bratton-Marshall technic.

free of cellular content. Blood vessels in the medullary portion of the kidneys were very congested. An area of intense inflammation with extensive necrosis adjacent to the pelvis was noted. Here only was the renal tubular structure entirely destroyed.

Microscopic examination showed drug deposits in the pelvis of the kidney. Immediately adjacent to the drug deposit the epithelial lining of the pelvis was ulcerated. Beneath the ulcerated areas was an area of intense inflammatory reaction and necrosis, with extensive hemorrhage, polymorphonuclear and round cell infiltration. The remaining tubular epithelium was essentially intact except for certain areas which contained drug deposits and desquamation and swelling of the tubular epithelium.

Uroliths surrounded by polymorphonuclear and small round cells were present within the renal pelvis and in several areas occupied the marginal zone of necrotic tissue. Numerous uroliths appearing to have a crystalline structure were present in the renal pelvis and within the urinary papillae.

COMMENT

The histologic appearance of the kidneys in this case in which sulfadiazine therapy resulted in anuria resembled that produced experimentally by Antopol and his associates[7] with sulfonamide drugs. Rats given single lethal doses of sulfathiazole or sulfapyridine showed an accumulation of precipitated noncrystalline free drug within the urinary tract. On the other hand, in animals in which sulfonamide administration was prolonged resulting uroliths were composed of acetylated drug. The authors used the term "calcifying nephrosis" to describe the reaction in the tissue zone adjacent to the drug deposits. Special staining demonstrated calcium deposition not only in the zone adjacent to the tubules but also within the lumen. Intense inflammatory changes and extensive necrosis occurred in tissue surrounding the drug deposit when the accumulations were not removed by irrigation within twenty-four hours.

Recently Gross, Cooper and Hagen[8] reported occurrence of urolithiasis in rats given sulfadiazine and postulated that this complication would also be observed in man. They concluded that crystal deposition took place almost exclusively within the renal tubules. They commented on the absence of hematuria because of the fan-shaped, rounded contour of the crystals and also on the absence of tissue trauma because of imprisonment of crystals within the tubular structures.

Plummer and McLellan[9] and Stryker[10] referred to the occurrence of sulfapyridine calculi within the renal pelves and calices but noted no zone of surrounding intense cellular reaction. Stryker and others[11] have also described the collection of plugs of sulfapyridine within the renal tubules.

The case herein presented showed many sulfadiazine uroliths in the renal pelves and renal papillae with an associated necrosis and inflammation in the surrounding tissue. There was some swelling and desquamation in the tubules, some of which contained deposits of the drug. In areas adjacent to the drug deposits, renal tubular structure was entirely destroyed. Hematuria was an accompanying clinical evidence of crystalluria.

This case does not illustrate a favorable result in the sulfadiazine therapy of pneumonia. The total amount of the drug given was not optimal. Cystoscopy and irrigation of the ureters was not performed initially when there was a diminution of the daily urinary output, and later, when anuria occurred, the precarious condition of the patient made this procedure of doubtful therapeutic value. Impending renal complications may be suggested by the failure of the urinary output to increase as clinical improvement occurs.[12]

Sulfadiazine Intake and Urinary Output

Day of Disease	Fluid Intake, Cc.	Sulfadiazine Administration: Number Doses	Sulfadiazine Administration: Total Gm.	Blood Sulfadiazine Level, Mg. per 100 Cc.		Urine Output, Cc.	Urine Crystals Sulfadiazine	Blood Nonprotein Nitrogen *	Comment	White Blood Cells	Differential Polymorphonuclears
2	5,150	6	9	.....	Invol. 4 x.	300	0		Dehydrated, semistupor	31,600	90%
3	4,750	6	6	8.6	Invol. 1 x.	750	3+	34.5	Perspiring freely		
4	3,450	6	6	6.6	1 spec. lost	950	0		Perspiring freely	5,000	
5	3,030	3	3	8.1	.....	525	0				
6	3,050	No drug during 50 hr.		4.6	Up to bathroom specimen lost		.....		Perspiring freely	8,150	80%
7	3,600	3	5	.....	2 specimens lost	600	0			24,350	84%
8	3,750	6	6	9.4	.....	1,950	0		Hiccups	20,800	84%
9	3,850	6	6	12.2	.....	1,650	3+			11,900	82%
10	3,750	6	6	10.2	.....	950	4+		•		
11	3,600	4	3½	12.0	.....	405	3+			13,000	92%
12	3,900	0	0	14.2	.....	830	3+ & RBC	79.0	Perspiring	21,850	94%
13	3,200	0	0	6.8	.....	360	1+ & RBC	115.6	Skin dry		
14	1,200	0	0	4.9	.....	0	.....	131.0	Died 2:56 p. m.		

* Note rising nonprotein nitrogen level.

CONCLUSIONS

1. Sulfadiazine therapy for type III pneumococcus pneumonia in a man resulted in urinary suppression and death.
2. Postmortem examination was limited to a study of the kidneys.
3. In the portions of kidney tissue adjacent to deposits of acetylated sulfadiazine, tissue damage was in evidence. Changes noted were ulceration through the epithelium lining the renal pelves, with an associated area of intense inflammatory reaction and necrosis. The precipitated drug was also noted in the renal tubules; some tubules were swollen and desquamated.
4. There is need for early ureteral catheterization and pelvic lavage when one is confronted with renal complications associated with sulfadiazine therapy.

7. Antopol, William; Lehr, David; Churg, Jacob, and Sprinz, Helmuth: Changes in the Urinary Tract and Other Organs After the Administration of Three Sulfanilamide Derivatives, Arch. Path. **31**: 592-602 (May) 1941.

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VENOUS ANGIOMAS OF SKELETAL MUSCLE

REPORT OF FOUR CASES

MARSHALL N. FULTON, M.D.
AND
MERRILL C. SOSMAN, M.D.
BOSTON

An angioma may be defined as a tumor mass composed of vascular channels and spaces (arterial, venous, capillary or lymphatic), nearly always of benign nature, arising in various areas of the body. There is divergence of opinion as to the nature of these growths. By some they are considered as true tumors, and it is well known that they may grow and exhibit the characteristics of a malignant neoplasm. By others, however, they are looked on as a simple malformation—a mass of "swollen blood vessels"—in some instances, at least, clearly related to injury. Their course is variable, many remaining stationary, some actually disappearing spontaneously. Though the majority are congenital in origin, they often do not produce symptoms until the age of late childhood or early adult life.

The features of angiomatous malformations in different regions of the body have been adequately covered in the literature. Davis and Kitlowski [1] and subsequently Jenkins and Delaney [2] reviewed in detail the subject of angiomatous tumors of skeletal muscle, bringing up to date reports from the literature on some 250 cases. The classic monograph of Cushing and Bailey,[3] published in 1928, dealt extensively with blood vessel tumors arising in the brain. In 1930 Bucy and Capp [4] made a comprehensive study of primary hemangiomas of bone, recording their observations in a series of 8 cases and emphasizing particularly the roentgenologic aspects. Pierson, Farber and Howard [5] reported a case of multiple hemangiomas of bone, probably of congenital origin. Other contributions in the recent literature include the study of Matas [6] on arteriovenous angioma of the arm with metastases, of Hampton and Sampson [7] on angioma of the tympanic cavity, of Oughterson and Tennant [8] on angiomatous tumors of the hands and feet and of Kevorkian [9] on hemangioma of the uterus. The recorded cases of angiomas of the skin and their treatment are legion.

Our purpose in this communication is to report 4 cases of angioma of skeletal muscle that have recently come under our observation, emphasizing particularly their roentgenologic characteristics. While this condition is not of extreme rarity, it occurs infrequently, and many are unfamiliar with the clinical and roentgenologic features. The latter, because of the presence of phleboliths in the angioma, are almost pathognomonic. Once the condition has been encountered it is not likely, subsequently, to present any difficulty in diagnosis.

From the Medical Clinic and Department of Roentgenology, Peter Bent Brigham Hospital, and the Department of Medicine, Harvard Medical School.

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CASE 1.—*Venous angioma of the right arm just above the elbow. Recurrent attacks of pain and swelling for thirteen years. Diagnosis by roentgen examination confirmed by injection of diodrast. Roentgen therapy.*

M. L., a housewife aged 23, was referred to us in October 1940 by Dr. John Thompson because of pain and swelling in the region of the right elbow. At the age of 10 she first became aware of trouble with this elbow in association with an infection which she thinks was a cold. Her elbow was "stiff," swollen and painful at that time. The condition persisted for about two weeks and was called inflammatory rheumatism. Ever since then on two or three occasions each year the patient had had an episode of pain, swelling and stiffness in the elbow lasting two to five days. The arm also seemed to be somewhat stiff and troublesome at times during rainy weather. She had had none of this for nearly two years until the present episode and, though there had always remained some slight residual swelling in the elbow, there had been no persistent pain in it and she had been able to carry suitcases or heavy weights

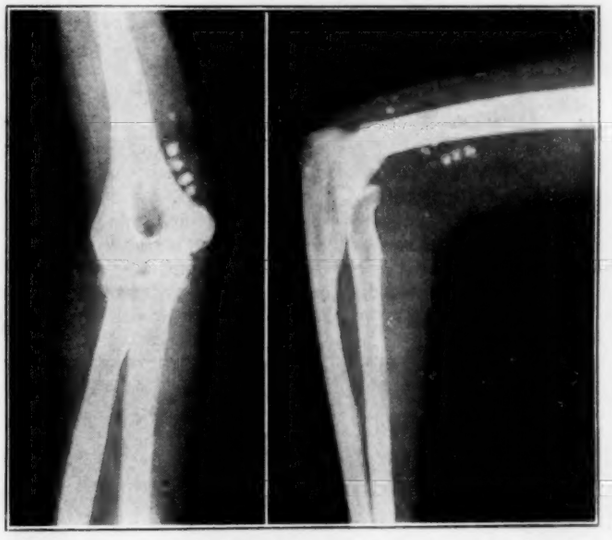

Fig. 1 (case 1).—Multiple phleboliths in the noncircumscribed angioma above the elbow joint. The bones are normal.

with her arm extended. About three weeks before, without any trauma or other precipitating cause, the arm at the elbow became swollen over a period of three or four days. The patient applied hot applications and a liniment and the swelling subsided somewhat, though tenderness and pain on motion persisted. She at first took sulfanilamide, and this seemed to have some good effect.

During the latter part of this three week illness she had had pain in both knees and in the posterior aspect of both heels. This pain had been very bad at times, necessitating her staying in bed, but had subsided following salicylate therapy. She had had elevation of temperature as high as 102 F. during the acute stage of her illness.

The right arm showed a moderate fusiform swelling in the region of the elbow, maximal over the joint and extending 3 or 4 cm. below and 6 or 7 cm. above. The arm was least painful with the elbow flexed at about 110 degrees. There was extreme pain on motion of the joint which made it impossible to determine the extent of limitation of motion. There was no evident discoloration of the skin. Nothing other than moderate tenderness and some increase in local temperature could be made out on palpation. No bruit was audible over the swelling. Except for some pain on motion of the knees, tenderness over the attachment of the achilles tendon and moderate generalized pallor of the skin and mucous membranes, the rest of the physical examination was negative. The tem-

perature was normal; the pulse rate, 90. The red blood cell count was 3,780,000, the white count 6,200.

An x-ray film (fig. 1) taken a short time before the patient was seen showed the unusual condition evident in the illustration; namely, multiple dense rounded shadows in the soft tissues above the elbow, several of them laminated, the largest one about 6 mm. in diameter. These were recognized as phleboliths, their presence in this region indicating a venous angioma. There was no evidence of disease of the joint itself or of the bones. (Even with this added information, one could not palpate any nodules in the swelling above the elbow.)

With continuance of local heat to the arm and salicylates, the patient made a prompt recovery, the discomfort disappearing in her lower extremities within a few days, the pain, tenderness and swelling in her arm gradually subsiding over a period of a week. At the end of this time the patient had no complaints referable to her arm other than her inability to straighten it beyond about 160 degrees, and pain on relatively slight traumatization. It was believed that this attack, similar in kind to the others she had had intermittently over a period of ten years, but of much greater intensity, represented an inflammatory reaction in the venous channels of the angioma, probably a thrombophlebitis. The nature of the trouble in her knees and ankles was not clear. This, she repeatedly attested, was the first time any joints other than the right elbow had ever been involved during an attack. It was thought possibly to represent a toxic reaction in the knee joints and at the site of attachment of the achilles tendon.

Several weeks after the patient had recovered, in an effort to substantiate the diagnosis of angioma, an injection of Diodrast Compound Solution (50 per cent diodrast) [10] was made in a vein on the medial side of the wrist with a tourniquet applied high up on the upper arm. X-ray films (figs. 2 and 3) showed the extraordinary plexus of veins making up the angioma and several large venous lacunae near the periphery. These, furthermore, showed the extent of the angioma and made clear the difficulties that would be encountered in attempting excision of the tumor. Because of the size and location of the lesion

Fig. 2 (case 1).—Lateral view during injection of diodrast after injection (*a*) of 10 cc., (*b*) of 20 cc. Note large lacunae and extensive anastomosis of venous channels.

plus the patient's objection to any operative procedure, roentgen treatment was carried out. The rationale of this therapy is based on the known effect of roentgen irradiation on angiomas in the skin and those in the brain, as seen, treated and followed up in Dr. Cushing's service. The factors used and the doses given were as follows: 200 kilovolts, 50 cm. skin-target distance, 0.5 mm. of copper and 1 mm. aluminum filter, 18 milliamperes current, constant potential full wave rectification. Treatments were given twice a week beginning November 4 and ending November 29. Each treatment was of three minutes' duration (200 roentgens) and the fields were alternated medially and laterally, including all of the demonstrably abnormal vessels. The total dose was 800 roentgens to each of two surfaces over the tumor.

There was no clearcut objective or subjective improvement following this treatment. When examined several weeks after the last treatment, the patient stated that she had experienced no discomfort in her arm, save for slight pain in the region of the elbow if she attempted to straighten out the arm by force. The right elbow region still showed a slight fusiform swelling with some increase in local skin temperature. The most noticeable swelling was just lateral to the olecranon process. Over this area the skin showed a faint bluish discoloration, and there was a soft, nontender, jelly-like mass palpable just beneath the skin. No nodules could be felt, and, again, no bruit was audible.

Fig. 3 (case 1).—Anteroposterior view following injection of 20 cc. of diodrast showing, better than the lateral view, the extent of the angioma, lacunae and component vessels.

As a means of evaluating the effect of roentgen therapy, a second injection with diodrast was made three and a half months after the last roentgen treatment. During this interval the patient had been symptomless; no obvious change in the appearance of her arm had taken place. Figure 4 indicates the condition of the angioma at this time. With the same amount of diodrast injected, there appeared to be a much less extensive anastomosing plexus of blood channels. Encouraged by this apparent improvement, we have carried out a second series of roentgen treatments with the same dosage as before. These were completed on April 21, 1941, without any apparent effect. Except for two minor attacks of pain and stiffness since that time the patient has been free from symptoms other than pain on forced extension of the elbow beyond 160 degrees.

CASE 2.—*Venous angioma of the left arm just above the elbow previously diagnosed fatty tumor. Persistent nontender swelling for sixteen years. Diagnosis by roentgen examination. Surgical excision.*

S. J., a woman aged 32, single, was referred for an x-ray examination of the left elbow by Dr. William T. Green, who gave permission to publish the details in this report. The patient stated that at about the age of 16 she became aware of a small swelling just above the left elbow on the inner aspect of the arm. A small mass of tissue was removed from this area which she was led to understand was a "fatty tumor." The operative wound healed normally. During the subsequent years a slight nontender swelling had persisted in this region, which would ache at times after she had exercised her arm, though never so as to incapacitate her. For three or four years the skin over this swelling had occasionally exhibited a variable degree, so she thought, of bluish discoloration. Some two weeks before being seen there had occurred, without obvious cause, a dull aching pain just above the elbow. There were also associated twinges of pain radiating down the forearm and hand to the little finger. She had suffered no loss of strength or limitation of motion in the arm, but she considered the swelling to be larger than usual.

Examination revealed a soft, slightly tender mass approximately 7.5 by 2 cm. in size just above the inner aspect of the left elbow. The skin over the mass had a faint bluish discoloration, and within it could be felt several small hard nodules.

10. The Winthrop Chemical Company, Inc., New York, supplied the Diodrast Compound Solution used in this study.

Pressure did not produce pain locally or along the course of the ulnar nerve. There was no limitation of motion or abnormal mobility. No murmur could be heard over the mass.

X-ray examination of the elbow (fig. 5 *a*) showed a smoothly outlined oval tumor just above the medial condyle of the humerus measuring 1.5 by 6 cm. in size. Within the tumor were multiple phleboliths of varying size and density. The tumor was considered, because of these, a venous angioma. A film of the other elbow showed no variation from normal.

Gas-oxygen anesthesia was administered, and, with a tourniquet applied above the tumor, dissection was carried through the deep fascia. The tumor was found to be made up of a mass of blood vessels invading the triceps muscle and growing around the ulnar nerve. A clean dissection was carried out which necessitated opening the nerve sheath, and it was possible for the operator to remove what he considered to be the entire tumor. Postoperatively the patient experienced numbness of the fourth and fifth fingers of the left hand with loss of power to abduct these fingers. This persisted for several days but gradually cleared up entirely. The wound healed by first intention.

The tumor showed on gross pathologic examination muscle and connective tissue containing several phleboliths measuring up to 7 mm. in diameter. Sections of the tissue revealed that it was a cavernous hemangioma containing organizing thrombi.

The patient has had no recurrence of any trouble during the two and a half years since operation. Roentgenograms taken at the end of this interval (fig. 5 *b*) show complete disappearance of the phleboliths and normal soft tissues and bones in the region of the elbow.

CASE 3.—*Venous angioma of left forearm and hand with involvement of phalanges and metacarpal bones. Enlarged veins of fingers, hand and forearm since birth. Periodic swelling following exercise. Diagnosis by roentgen examination. Roentgen therapy.*

Fig. 4 (case 1).—Antero-posterior view following injection of 20 cc. of diodrast three and one-half months after roentgen irradiation. Note the apparent decrease in the intercommunicating vessels. (Compare with fig. 3.)

R. M., a youth aged 18, a stenographer, was first seen in the surgical service of this hospital in 1929 complaining of a painful swelling of the left hand and forearm, with subcutaneous hemorrhages on the palmar surface. It had been noted a few weeks after his birth that there were numerous enlarged veins on the palmar surface of the three medial fingers of the left hand and on the palm and ventral surface of the left forearm. These caused no particular difficulty, but as the patient grew up he noticed that, following the use of his arm in such activities as heavy lifting, shoveling or rowing a boat, the arm and hand would exhibit painful swelling that would persist for varying periods of time. On one occasion after the administration of diphtheria antitoxin there had been much swelling. The enlargement necessitating his present admission had come on four days before, following the handling of some heavy boxes. The arm and hand, in addition to being swollen, had seemed to turn a bluish red, and he had noted considerable pain on moving the fingers or wrist. There had been no throbbing and no general constitutional symptoms. There was no history of any similar trouble in other members of his family.

The patient was large and muscular. Physical examination apart from the left arm and hand showed no significant abnormality. The left arm from the elbow down was swollen, reddish blue, distinctly warm to the touch and tender. In the hand the swelling involved the palm and the palmar surface of the three medial fingers. The dorsal surface and the thumb and index finger were not noticeably affected. There were minor subcutaneous hemorrhages in the swollen parts. The radial pulses were equal. Enlarged veins were noted by one observer in the left axilla. The appearance of the arm and hand is shown in figure 6. Laboratory studies of the urine and blood, including bleeding and clotting time, were normal. During his week's stay there were occasional mouth temperatures of 99.4 and 99.6 F. X-ray examination (figs. 7 and 8) showed

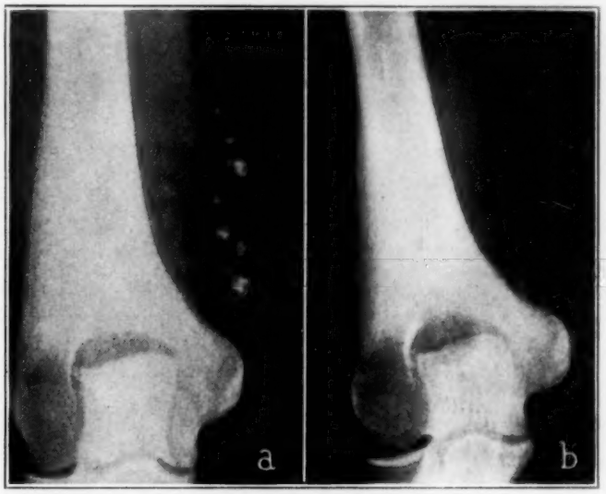

Fig. 5 (case 2).—Multiple phleboliths of varying size and density completely removed by operation: *a*, before and *b*, two and one-half years after surgical excision of circumscribed angioma.

multiple phleboliths of various sizes in the left forearm and palm (none in a control film of the right arm). Several of the bones of the hand showed a peculiar honeycombed appearance, particularly the second phalanx of the fifth finger, less marked in all three phalanges of the ring finger and slight in the third, fourth and fifth metacarpals. The other bones appeared normal. These findings were considered indicative of an angioma of the left forearm and hand, and a similar type of lesion in several of the bones.

The arm was treated for a week by elevation and hot soaks with resulting reduction in the swelling, discoloration and tenderness. Further diminution was evident when the patient was seen again a month later for discussion as to the most advisable therapy. The condition was considered a congenital venous hemangioma of the forearm and hand, far too extensive to allow for surgical excision. The periodic swelling was looked on as the result of venous stasis probably with associated inflammatory reaction (thrombophlebitis). Treatment by roentgen irradiation was undertaken, the patient receiving five double treatments of 700 roentgens in each series, two of them only to the fifth finger and three series to the entire forearm and hand over a period of ten months. The treatments were given with medium voltage (140 kilovolts), 40 cm. target-skin distance and 0.25 mm. of copper filter. No definite improvement was noted from this, and treatments were therefore discontinued.

The patient was lost sight of during the twelve year interval, having moved meanwhile to a distant locality. He has recently informed us by letter that there is no apparent change in the condition of the hand and arm. On occasions when he may bruise or use it excessively there may be swelling, which is "mildly painful." "This," he adds, "is the way it acted in the past." X-ray films secured this year through Dr. E. L. Volke of Akron, Ohio, show a diminution in the number of phleboliths in the forearm, one additional one in the palm, and considerable improvement in the bone lesions.

CASE 4.—*Venous angioma of sole of right foot with symptoms of four years' duration and development of phleboliths during this interval. Diagnosis by roentgen examination. Surgical exploration. Roentgen therapy.*

W. F. B., a grocery clerk aged 20, was first seen in the surgical outpatient department at the age of 16 complaining of pain in the longitudinal arches of both feet, especially the

right. There was no history of trauma or infection. Examination showed only bilateral pronation and some swelling and tenderness over both calcaneoscaphoid regions. An x-ray film showed no apparent variation from normal. There was improvement with strapping, foot exercises and a heel lift to both shoes. He was lost sight of but returned after four years, stating that he had had occasional discomfort in the sole of the right foot with walking but that for three months, without obvious cause

Fig. 6 (case 3).—Appearance of forearms and hands, showing swelling and blotchy discoloration of the palm and three medial fingers of the left hand.

for aggravation, there had been rather severe pain in the same region, with a persistent ache in the foot even when he was quiet in bed. On examination there was evident swelling of the sole of the foot with tenderness on moderate pressure over the midportion but no discoloration of the skin. The patient was unable to plantar flex his toes normally. The left foot appeared normal except for slight pronation. An x-ray examination at this time (fig. 9) showed a diffuse slight swelling involving almost the entire extent of the longitudinal arch with two rounded dense shadows in the middle part of the swelling which were thought to be phleboliths. Because of these, a presumptive diagnosis of venous angioma was made.

Under spinal anesthesia an exploratory operation was carried out which revealed an obvious angioma composed of large tortuous vessels contained in strands of dense connective tissue occupying the so-called second muscle layer of the foot. It was judged too extensive for dissection. A small piece of tissue removed for microscopic study was unsatisfactory. The operative wound healed normally.

Following operation the patient received roentgen therapy daily for ten days, the dosage employed being the same as that in case 1, the total dose being 1,000 roentgens to each of two surfaces over the tumor. When seen six weeks after this treatment he reported very definite improvement, stating that he experienced pain in the foot only after running and that this lasted for only a few minutes. The appearance of the foot was unchanged.

COMMENT

These 4 cases serve to illustrate the course and some of the features of venous angiomas. In each of the first 3 instances there was a history of swelling of the arm noted since childhood, with periodic episodes of pain, tenderness and increased swelling. The diagnosis in each of these cases was established by the roentgenologic demonstration of sharply defined calcified phleboliths within the tumor. This finding clarified in the first case what had been looked on as a recurrent, monoarticular arthritis; in the second, as a fatty tumor of the arm. In case 4 the finding of phleboliths in the second x-ray examination which were not present four years previously made evident the nature of the swelling in the foot.

The occurrence of phleboliths, particularly in the veins of the pelvis, is, of course, extremely common, and their recognition by roentgenologic examination is an almost daily experience. The phleboliths result from the deposition of calcium in organized thrombi attached to or within the wall of the vein. A number of these calcified shadows in x-ray films in areas of the body where there is normally no plexus of veins is indicative of an abnormal collection of venous channels and is to all intents and purposes pathognomonic of a venous angioma. While this fact is well known to experienced roentgenologists and is described in standard textbooks on x-ray interpretation,[11] it is not a condition of common enough occurrence to be recognized generally. Where the mass of vessels is sharply circumscribed, as in case 2, a definite tumor mass may be outlined within the surrounding muscle. In other cases the malformation may extend diffusely through the tissues so as not to be recognizable as a localized tumor. There may, of course, be no phleboliths present, in which case the roentgenologic examination may show no more than a swelling or tumor of the soft tissues.

Fig. 7 (case 3).—Widely scattered phleboliths in forearm. The bones are normal.

One may summarize the general facts concerning venous angiomas of skeletal muscle as follows: They occur with about equal frequency in the two sexes. In the great majority of instances the malformation is noted during childhood or early adult life, a fact which indicates their probable congenital origin. Just how much trauma has to do with their development is not clear. In some instances, doubtless, it does no more than call attention to a preexisting lesion, perhaps by initiating a reaction leading to thrombosis within the veins and cavernous spaces of the tumor. It is certainly true that patients are commonly made aware of their angioma following minor injury. There is "no doubt motion plays a big role in the growth of the tumor." [1]

11. Holmes, G. W., and Ruggles, H. E.: Roentgen Interpretation, ed. 6, Philadelphia, Lea & Febiger, 1941, p. 21.

The tumor may occur in any striated muscle. The fact that 3 of our 4 patients had theirs in the arm emphasizes unfairly this site for the tumor. In the large series reported [2] the upper arm was the site of location in 22 instances compared to 59 in the thigh, 39 in the lower leg, 36 in the chest and 26 in the forearm. The most frequently involved muscle was the

Fig. 8 (case 3).—Phleboliths in the palm and honeycombed appearance of several phalanges and metacarpals due to angiomas in these bones.

quadriceps extensor. The size of the tumor varies from 1 to 2 cm. up to a mass 10 to 12 cm. in diameter or larger. Microscopic study shows enlarged venous channels and cavernous spaces, some lined by a single layer of epithelium and some showing considerable thickening of the intima or adventitia. These contain either normal blood or thrombi, with or without calcification. There may be deposition of considerable fibrous connective tissue, and the remains of striated muscle fibers are commonly present showing various stages of degeneration.

The symptoms complained of will vary from none at all to those of considerable magnitude. Pain is the commonest, in some instances related to muscular movement (which may be impaired); in others, arising from nerve pressure and following a sensory nerve distribution. Paresthesias and numbness, and periodic or constant swelling are common. The physical attributes of the tumor likewise differ according to its size and location. There is occasionally fixation of the overlying skin, and the latter may be warm to the touch and may exhibit some degree of bluish discoloration. The mass often is soft, jelly-like and movable, sometimes quite firm and fixed. As already noted, it may be fairly sharply localized when encapsulated or may be diffuse. The phleboliths at times are easily palpated. Rarely are pulsations or bruits to be made out unless there are free arteriovenous communications.

The differential diagnosis will include the common tumors which have some of these physical characteristics, namely lipomas, fibromas and so on as well as quite dissimilar conditions: cold abscess, hematoma, dermoid and even aneurysm. The diagnosis is not always easy, and the true nature of the lesion often is recognized only at operation. Three procedures are helpful in clarifying the diagnosis:

1. Exploratory puncture with aspiration of normal blood.

2. The intravenous injection of radiopaque solution, as used in case 1. This measure is of particular help in diagnosis when phleboliths are not present. It is of value in demonstrating the extent of the angioma and may also assist in determining the effect of roentgen therapy. Obviously it is applicable only when the angioma is so located that a tourniquet can be placed proximal to the tumor to prevent the immediate dissemination of the injected material into the general circulation.

3. Most helpful of all, roentgen examination. On the x-ray film the venous angioma may show as a distinctly outlined mass (case 2) or simply as a diffuse soft tissue swelling (cases 1, 3 and 4). The characteristic and practically pathognomonic finding is the presence of phleboliths. These appear as small, dense, smoothly outlined areas, heavily calcified, either round or slightly oval, often showing concentric laminations. As noted, they are commonly seen in the pelvis, particularly in elderly people, more frequently in women than in men, and also in the spleen. The calcified shadows in the spleen are usually smaller, rounded and not laminated and may be interpreted as calcified tubercles or calcified infarcts, which they may be on occasion. The pentastomum, a parasitic arthropod, may lodge in the spleen and undergo calcification, forming nodules the size of a pea, commonly mistaken for phleboliths. Phleboliths are occasionally seen singly in the lower part of the legs of elderly patients, especially if varicose veins are also present. When three or more phleboliths are seen grouped together in an unusual location such as an extremity or the chest or abdominal wall, the logical conclusion is that one is dealing with an abnormal collection of veins, usually, of course, a venous angioma.

The differential diagnosis from other calcified bodies is usually quite easy, owing to their characteristic size,

Fig. 9 (case 4).—Right foot four years after original complaint of pain, showing phleboliths in the sole of the foot not present four years previously.

shape, structure and density. Droplets or particles of metallic substances used in medication, such as bismuth or mercury, are definitely more opaque to the x-rays, more irregular in distribution, not laminated and nearly always found in the buttocks. Calcified parasites rarely are confused with phleboliths, the trichiniasis parasite being too small to show by x-ray except in excised pieces of muscle. The cysticerci, when calcified, are

smooth in outline but oval, measuring 2 to 4 mm. in width by 8 to 10 mm. in length. They are not as dense as phleboliths, are finely granular in appearance and do not show a laminated structure. They are rarely present in groups, being widely scattered throughout the body. The guinea worm (Dracunculus medinensis) frequently calcifies but is not in any way similar to phleboliths and is seen only in India, Asia and some parts of Africa.[12] Lymph nodes, arteries, tubercles, infarcts, abscesses, uterine fibroids, dermoids and hydatid cysts may undergo calcification but are not of the size, shape or distribution to be confused with phleboliths. Calcinosis interstitialis and myositis ossificans are irregular and streaky in distribution. The former frequently is limited to the skin and subcutaneous tissue; the latter may be limited to one muscle or one group of muscles and tendons. They are not at all similar to calcified phleboliths.

The treatment most generally advised for angiomas of this type is surgical excision. Removal when feasible should be carried out as early as possible to reduce the danger of functional impairment of the part and prevent the growth or extension of the tumor. Surgical excision is not always simple, indeed at times is impossible because of the extent of the angioma (as in cases 3 and 4). Difficulties commonly encountered in surgical removal arise from the extension of the angioma so that it involves important neighboring structures such as nerve trunks, which may be damaged during the dissection of the tumor. Hemorrhage of appreciable magnitude may occur in the course of operative removal, as happened in the case reported by Jenkins and Delaney.[2] They state that hemorrhage "of considerable moment" occurred during surgical excision in 38 of the cases reviewed by them. Venous angiomas are rarely supplied by a single large vessel, so that ligation has not proved a successful form of therapy in inoperable cases. According to Davis and Kitlowski, such measures as long continued compression of the angioma or the injection of sclerosing or coagulating fluids have not been satisfactory. These authors also question the effectiveness of roentgen and radium treatment. Our experience with roentgen irradiation of angiomas of this type has been limited and, in the main, disappointing. The results noted in the cases reported in this paper, in which surgical excision did not seem advisable, have not been striking except in case 4. Certainly there is less effect in this type of angioma than in angiomas of the brain and skin, which often show very good response to irradiation. This may be due to the difference in size of the vessels involved. The smaller and more embryonic in type the vessels are, the more readily they are affected by irradiation.

SUMMARY

In 4 cases of venous angioma of skeletal muscle the diagnosis was made by the x-ray demonstration of phleboliths in the tumor. The finding of multiple phleboliths in areas of the body where normally no plexus of veins exists is practically pathognomonic of a venous angioma.

The value of a radiopaque material in delineating the extent of the tumor was illustrated in 1 case.

The treatment of choice is early surgical excision. Roentgen therapy may be of benefit and should be tried in instances in which surgical excision is inadvisable or impossible.

12. Beal, A. M.: Calcified Guinea Worm: Report of Five Cases, Am. J. Roentgenol. **39**: 210 (Feb.) 1938.

THE USE OF MICROCRYSTALS OF SULFATHIAZOLE IN SURGERY

LESLIE A. CHAMBERS, PH.D.
T. N. HARRIS, M.D.
FRANCIS SCHUMANN, M.D.
AND
L. KRAEER FERGUSON, M.D.
PHILADELPHIA

In certain procedures it is desirable to inject neutral suspensions of the sulfonamides through fine hypodermic needles. Usually this is not possible with suspensions of the drugs currently available because of the large size and irregular shapes of the crystals. Dr. B. F. Souders and Dr. S. Brand Rose independently suggested that the crystals might be comminuted by sonic vibration. Direct vibration of suspensions of the preformed crystals produced no measurable effect, but an indirect procedure involving sonic agitation has been developed which reduces the crystal size sufficiently to permit passage through 26 gage needles.

Essentially, the preparation of the microcrystalline sulfonamides consists in the neutralization, at low temperature, of a solution of a sodium salt of the drug, the reacting mixture being kept in violent agitation by sonic vibration or by some suitable high speed mixing device. The size of the resulting crystals may be regulated within wide limits by controlling the speed of admixture or the temperature of the reactants or both. The microcrystals are fairly uniform in size, and aqueous suspensions of the material in concentrations up to about 30 per cent by weight are stable and show but little tendency to settle out.

A 20 per cent suspension of the microcrystalline drug in water or salt solution has the consistency of thick cream or magnesia magma. On the other hand, the water may be removed by filtration or centrifugation and the sediment dried to a fine powder. Both wet and dry preparations have physical properties of probable advantage in restricted therapeutic procedures.

It is obvious that the saturation level of a drug in tissue fluids will be the same no matter what the original crystal size, but the rate of attaining that level in the case of a substance of low solubility such as sulfathiazole is dependent on the total solid surface presented to the fluid and therefore on the size of the drug particles. When applied locally, the rate of solution of large crystals may be too low to maintain a saturation level in the adjacent tissue. On the other hand, the same amount of sulfathiazole, finely divided, may have a sufficiently high rate of solution to maintain saturation in nearby fluids, or even to maintain a fairly high systemic blood level for several hours.

As a reasonable approximation, it is probably safe to assume that the occurrence of a high sulfathiazole level in the blood of an experimental animal after local implantation of the drug indicates that much higher concentrations exist in the immediate vicinity of the depot. Therefore we have compared the rates of absorption into the blood stream of the microcrystals and the untreated macrocrystals in a series of dogs and rabbits after implantation of the drug both intra-

The microcrystalline sulfathiazole used in this study was prepared and supplied by and the work aided by a grant from the Smith, Kline & French Laboratories of Philadelphia.

From the Johnson Research Foundation and the Surgical Services of the Philadelphia General Hospital, the Hospital of the University of Pennsylvania and the United States Naval Hospital at Philadelphia.

muscularly and intra-abdominally. The average blood levels were considerably higher for the micro than for the macro preparations, especially during the first few hours after administration. These data were obtained on a total of 23 rabbits, 15 of which received microsulfathiazole intraperitoneally and 8 of which received macrosulfathiazole by the same route. The dose in each instance was 500 mg. per kilogram of body weight and the drugs were in the form of 20 per cent aqueous suspensions.

Similar differences in absorption have been observed in a series of rabbits which received the same amount of the two types of drug suspension intramuscularly, but the absolute level in the blood was much lower in both cases than those which resulted from intra-abdominal implantation. No gross local reactions were observed in any of these animals, and it was not possible to locate the site of the implantation on dissection of the muscle ten days subsequent to the injection.

A similar difference in the rate of absorption of the two drugs has been observed in a series of 10 dogs. However, all of these results should be regarded as preliminary to a more extensive study, the results of which must await completion of more experiments. No inference should be drawn at present beyond the apparent fact that the microcrystalline sulfathiazole is absorbed from local depots more rapidly than is the same drug in macrocrystalline form.

Although sulfanilamide received early and deserved recognition as a local application in the prophylaxis and treatment of infections, its action against many of the contaminating organisms was less effective than had been hoped for. Experimental and clinical observations have shown it to be only weakly effective against staphylococci, colon bacilli and the gas gangrene organisms. In war wounds treated with sulfanilamide, those not responding well were found to be heavily infected with staphylococci.[1]

Sulfathiazole, however, appears to be an ideal compromise. It is effective in proper concentrations not only against the streptococcus but also against the staphylococcus, the colon group, Pseudomonas aeruginosa, Proteus vulgaris, Clostridium perfringens, Clostridium septicum and Clostridium oedematiens, and even in a measure against the tetanus bacillus.[2]

These are the common organisms causing local infections. They are also the common contaminating organisms in acute traumatic wounds. Pulaski, Meleney and Spaeth,[3] in a recent paper on the bacterial flora of 200 traumatic wounds, reported cultures which may be summarized as in table 1.

TABLE 1.—*Cultures Found in Two Hundred Traumatic Wounds*

	Per Cent
Staphylococcus albus	81
Staphylococcus aureus	52
Streptococci	50
Clostridia	23
Enterobacilli	24.5

The use of sulfathiazole locally has considerable experimental and clinical support. The most voluminous literature from the experimental side concerns infections with the organisms of gas gangrene. The consensus [4] seems to be that sulfathiazole is the most effective of the sulfonamide drugs, although Bliss, Long and Smith [2] believe that sulfadiazine may be a little better.

It is agreed by most writers that sulfathiazole is highly effective against staphylococcic infections,[5] this even in the presence of pus and slough. Kennedy,[6] Key,[7] Hawking [8] and Brunner and Schläpfer [9] have urged its prophylactic use in traumatic and surgical wounds. The latter authors [9] report 109 wounds of varying degrees of depth and extent in which only the ragged edges of the wound were excised and sulfathiazole powder was applied. The wounds healed without inflammatory reaction, and recovery was not delayed. Sulfathiazole applied locally does not produce necrosis in experimental wounds and only very slight depression of fibroblast formation.[10] We have confirmed this observation in experimental wounds and clinically. In the abdominal cavity, Throckmorton [11] found that powdered sulfathiazole did not cause peritoneal damage but was grossly visible in agglutinated masses in the omentum three to six days later.

TABLE 2.—*Solubility of Sulfanilamide and Sulfathiazole in Saline Solution and in Serum*

	Solution in Saline at 37 C., Mg./100 Cc.	Solution in Serum at 36 C., Mg./100 Cc.
Sulfanilamide	1,500	1,500 +
Sulfathiazole	104	184

The chief theoretical disadvantage against the use of sulfathiazole is its tendency to clump and form insoluble masses which may act as foreign bodies in the tissues. As compared to sulfanilamide, the drug is much less soluble in watery solution (saline) or in serum (table 2).[10]

The relatively low solubility in some respects may be an advantage in that the drug persists in the wound for four or five days. These results made Hawking [10] conclude that "probably the optimum combination of high concentration plus sufficient duration is by sulfathiazole," when compared with sulfanilamide, sulfapyridine or sulfadiazine.

CLINICAL RESULTS

The clinical results to be reported must be looked on as clinical impressions; they may be criticized on the basis of their small number. Nevertheless our reactions to the use of the microcrystalline drug have been so favorable that they seemed worth while mentioning. We have had considerable experience with

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5. Spink, W. W., and Paine, J. R.: Local Use of Sulfathiazole in Treatment of Staphylococcic Infections: Preliminary Report, Minnesota Med. **23**: 615 (Sept.) 1940; abstr. J. A. M. A. **115**: 1488 (Oct. 26) 1940.
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8. Hawking, Frank, and Piercy, J. E.: Blood Concentrations After Local Application of Sulfathiazole to Wounds, Brit. M. J. **1**: 511 (April 5) 1941.
9. Brunner, W., and Schläpfer, E.: Local Application of Sulfathiazole in Treatment of Accidental Trauma, Schweiz. med. Wchnschr. **71**: 213 (March 8) 1941.
10. Hawking, Frank: Local Concentration of Sulfonamide Compounds Inserted into Wounds, Lancet **1**: 786 (June 21) 1941.
11. Throckmorton, T. D.: The Peritoneal Response to Powdered Sulfonamide Compounds: An Experimental Study, Proc. Staff Meet., Mayo Clin. **16**: 423-425 (July 2) 1941.

the use of sulfanilamide and ordinary sulfathiazole powder in wounds and local infections, and it is on the basis of this comparison that our clinical impressions are formed.

The microcrystalline sulfathiazole was used in the form of a powder and as a suspension in saline. The latter preparation, which in 10 or 20 per cent strength looks and behaves somewhat like magnesia magma, was used to be introduced into the abdomen or into larger cavities of wounds or abscesses. It can be easily injected through needles or with a syringe and catheter through small wound openings so as to reach all parts of a cavity. This ease of introduction and the avoidance of clumping are the chief advantages of the preparation. The crystalline powder was dusted over the surface of superficial wounds and infections with a powder blower or lightly spread with a cotton swab.

USE IN TRAUMATIC WOUNDS

We have used the microcrystalline sulfathiazole in 30 traumatic wounds. From 0.5 to 4 Gm. of the powder or suspension was introduced according to the size of the wound. All wounds were seen and treated within twenty-four hours, most of them within eight hours. Four of the wounds were complicated by division of tendons and three by compound fractures. The wounds were treated by a thorough mechanical cleansing; tendons were sutured with silk and, except in 5 cases, the wounds were sutured primarily and dressed with an immobilization dressing. The sutured wounds healed by primary intention in every case, and the crushed and contused wounds which could not be sutured healed without any evidence of infection. Evidence of a foreign body reaction from the implanted drug did not develop in any wound. During the same period two traumatic wounds, one in which there was a severed tendon, were treated in the same way but without sulfathiazole. One of these became infected and had to be opened and allowed to heal by secondary intention.

USE IN INFECTIONS

In 57 local infections, abscesses, carbuncles, felons and similar lesions we have implanted the microcrystalline sulfathiazole, usually in the powder form. In these wounds it was easier to compare the use of the ordinary powder with the microcrystalline form. In some cases these two preparations were used at alternate dressings and applied in the same way. When dressed on the third or fourth day after implantation of the drug there was definitely more clumping of the ordinary powder than of the crystalline form. However, it must be admitted that in several cases in which the ordinary powdered drug was used with wet saline dressings there was no evidence of caking when the dressings were removed.

The critical result to be expected from the local use of sulfathiazole is marked by the rapid and almost complete subsidence of the suppurative process. The infections were incised, pus was evacuated and the abscess cavity was dusted with the microcrystals followed by gauze packing, or the cavity was packed with gauze impregnated with the suspension of microcrystals. When the packing was removed on the third or fourth day the wounds were clean and granulating with a minimum of slough. Necrosis of fascia and tendon prolonged the suppurative process in a few cases.

The cultures in 18 cases showed staphylococci and in 7 showed streptococci. The effect of the drug seemed to be equally good against these two organisms. The drug did not seem to free the abscess cavity of the infecting organisms because they could be recovered in repeated cultures, but the organisms seemed to be avirulent, and skin grafts could be applied with a complete take in several instances.

In 5 of these cases the infection was gangrene of the toes. In each instance a local amputation with implantation of sulfathiazole powder every third day resulted in healing without spread of the infection or gangrene.

There was a noticeable absence of the edematous hypertrophic granulations frequently seen when sulfanilamide crystals are applied to a granulating surface over a period of time.

MICROCRYSTALLINE SULFATHIAZOLE IN BURNS

Our experience with the use of sulfathiazole in burns has been rather limited, but the results have been so striking that they are worthy of mention. The burns have been treated by excision of the burned areas and blebs and the application of powdered sulfathiazole by a powder spray. The burned areas were then covered with moist saline dressings which were moistened every three hours with a syringe. Except for the first twenty-four hours, when the pain was relieved by morphine, the burned areas were painless. The same applications were made until healing was complete. In these cases, the absence of unhealthy granulations so frequently seen with applications of sulfanilamide was noticeable. In spite of a large burned area, the blood level of sulfathiazole was never more than a trace.

THE INTRA-ABDOMINAL APPLICATION OF MICROCRYSTALLINE SULFATHIAZOLE IN SUSPENSION IN SALINE SOLUTION

We have introduced the suspension of microcrystals into the abdomen in 19 instances. The amounts have varied from 4 to 14 Gm. of the drug. The operations performed were exploratory laparotomy two, enterostomy one, gastric resection three, for carcinoma of the large bowel or rectum seven, for acute pancreatitis one, for appendicitis four and for intestinal fistula one.

When the suspension is introduced into the abdomen, it rapidly spreads over the surface of the intestine and omentum. It has not produced any untoward effect in any case, if the clinical course of the patient is an indication of an adverse reaction. The drug is found in the blood in measurable amounts as early as three hours after its implantation and is still demonstrable at sixty hours.

PRACTICAL POINTS IN THE USE OF SULFATHIAZOLE POWDER OR SUSPENSION

In wounds that are to be sutured it is well to insert the sutures before the sulfathiazole is introduced and to tie them after its application. The presence of the powder in the wound somewhat masks the anatomic structures.

In traumatic wounds, bleeding should be stopped as completely as possible before the drug is introduced.

In abscess cavities the drug should not be dumped into the wound but should be dusted over the surface in a thin layer followed by plain gauze, or the gauze may be impregnated with the powder or suspension. Petrolatum gauze should not be used. The implantation of sulfathiazole does not contraindicate the use of wet dressings and, in infections with much slough, its action seems to be enhanced by their use.

We have made no effort to sterilize either the microcrystalline powder or the suspension and have not seen an infection arise from this practice.

SUMMARY

Microcrystals of sulfathiazole can be prepared by crystallization of the drug as it is violently agitated by sonic vibration. The crystals so formed may be made into a saline suspension or into powder form for use in surgical lesions.

The small size of the microcrystals permits a rate of solution which appears to be more rapid than that observed with the usual sulfathiazole powder.

We believe that sulfathiazole is superior to sulfanilamide powder as a local application in traumatic wounds and infections because it is effective against a wider range of the organisms usually found and because it exerts its effective action over a longer period of time.

The results with the local use of the microsulfathiazole in 30 traumatic wounds and 57 cases of infection have been favorable. It was used in suspension in the abdomens of 19 patients with no untoward results. The tendency of the micropreparation to clump or cake is much less than with the usual preparation of sulfathiazole powder.

TREATMENT OF INFLUENZAL MENINGITIS WITH SULFADIAZINE

PRELIMINARY REPORT

WALLACE SAKO, M.D.
CHESTER A. STEWART, M.D.
AND
JOEL FLEET, M.D.
NEW ORLEANS

Recent advances in chemotherapy have opened a more hopeful outlook on the treatment of bacterial meningitis. The usual failure of influenzal meningitis to respond favorably to the sulfonamide drugs that have been employed stands in sharp contrast to numerous recoveries which have been reported following the chemotherapy of other forms of purulent meningeal infection. It is true that sulfanilamide and sulfapyridine, used either alone or in conjunction with antiserum, have produced isolated cures, but Aleman,[1] who has recently reviewed the literature and her clinical experience with influenzal meningitis, stated: "Every form of treatment reported in the literature is discounted by those who have seen failures, and by actual statistics where a large number have been reported."

Although anti-influenzal horse and rabbit serums have improved the prognosis of influenzal meningitis, data collected from the literature do not permit us to regard these serums with enthusiasm. The efficacy of the new concentrated antibody solution remains to be determined.[2]

The frequent failure of serotherapy, sulfanilamide, and sulfapyridine to influence influenzal meningitis favorably led us to seek a more effective chemotherapeutic agent. Apparently this was found in sulfadiazine. This drug is reported to have a low toxicity, to be secreted readily into the cerebrospinal fluid and to undergo relatively little acetylation. Furthermore, owing to its ready absorption and slow excretion, high blood concentrations are sustained with comparative ease.[3] Theoretically, these properties should make this drug particularly suitable for the treatment of purulent meningitis.

The results obtained through the use of sulfadiazine and relatively few spinal punctures in the treatment of 7 young children with influenzal meningitis at Charity Hospital during the past few months have been so gratifying that we feel it worth while to make a preliminary report at this time.

Two of the 7 patients who received sulfadiazine died. One death (of patient 7) occurred during the performance of a cistern puncture, and apparently the surgical procedure rather than the meningeal infection was responsible for the fatal issue. The other death (of patient 6) occurred after premature cessation of sulfadiazine therapy and contraction of chickenpox. Of the 5 survivors who have been discharged from the hospital, all have remained well without residual symptoms after a follow-up period of four months. The temperature curves of 4 of the patients who recovered are portrayed in the accompanying chart. One of the patients who died and 3 of those who recovered were treated exclusively with sulfadiazine, while the other patient who died and 2 who recovered received anti-influenzal serum in conjunction with the drug. A detailed report of these cases will now be presented.

REPORT OF CASES

CASE 1.—B. B., a 3 year old white girl weighing 37 pounds (17 Kg.), was admitted to Charity Hospital at 6 p. m. on Dec. 8, 1941. The parents stated that the child had been well except for a slight head cold for one week prior to admission. At 10 a. m. on the day of admission she had a chill which was followed by fever. Drowsiness and stupor then ensued.

The past history revealed that the patient contracted measles at the age of 1 year and a nonspecific dysentery in June 1941, from both of which she made a complete recovery.

Physical examination on admission revealed that the child was well nourished and well developed and was stuporous; she was lying quietly in bed with both legs flexed. The rectal temperature was 102.6 F., pulse rate 120 and respiratory rate 35. The ear drums appeared normal and the mastoids roentgenographically were normal. A slight nasal discharge and a mild redness of the posterior pharynx were present. The neck was rigid, and Kernig's and Brudzinski's signs were positive. Examination of the lungs disclosed dulness to percussion with increased breath sounds and crepitant rales in the right upper lobe. The heart sounds were normal. The deep reflexes were slightly increased.

A spinal tap done on admission showed a cloudy fluid. The globulin level was increased, chlorides were 750 mg. and sugar 30 mg. per hundred cubic centimeters. The cell count was 12,000, 95 per cent of which were polymorphonuclear cells. Gram-negative pleomorphic bacilli were seen on smear, which on culture proved to be Hemophilus influenzae. Blood culture taken at the same time was likewise positive for the influenzal bacillus. The red blood cell count was 3,950,000, hemoglobin 55 per cent (Sahli) and white blood cell count 15,000 with 90 per cent polymorphonuclear cells. The urine was normal.

Sulfadiazine was started on admission. An initial dose of 30 grains (2 Gm.) was given by stomach tube, followed by a maintenance dose of 2 grains (0.13 Gm.) per pound (450 Gm.) of body weight daily, divided into six equal doses and admin-

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From the Department of Pediatrics of the Louisiana State University School of Medicine and Charity Hospital.

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istered every four hours. This dose was continued for nine days, at which time it was reduced to 1½ grains (0.1 Gm.) per pound of body weight daily until the drug was discontinued nineteen days after it was started. A total of 80 Gm. of sulfadiazine was given.

The patient's stupor deepened into coma the day after admission. The following day she was sitting up in bed eating and feeling much better. Three days after admission the child was afebrile. Her course is indicated in the chart by the solid line. Seven days after she was started on sulfadiazine therapy the spinal fluid was clear and the culture was negative. At this time, the drug level in the spinal fluid was 11 mg. per hundred cubic centimeters of free sulfadiazine, while the blood level was 17 mg. per hundred cubic centimeters. Only two spinal punctures were done. Small blood transfusions were also given. The patient was discharged twenty-three days after admission. She was seen in the outpatient clinic on two occasions with no complaints and presented no evidence of residual cerebral damage, having been afebrile throughout a period of five weeks since discharge.

CASE 2.—R. S., a 3 year old white boy weighing 30 pounds (13.6 Kg.) was admitted to the hospital on Nov. 27, 1941 complaining of fever, stomach-ache and severe headache. At 8 a. m. on the day of admission he went to bed, and his mother had not been able to arouse him up to the time of admission.

The past history was unimportant except for pertussis, which the child contracted in 1940. On physical examination the patient was fairly well nourished and well developed and was in a comatose condition. The rectal temperature was 103 F., the pulse rate 122 and the respiratory rate 20. The eyes and ears were normal and roentgenograms of the mastoids were negative. The heart and lungs showed nothing abnormal. The neck was rigid and Kernig's sign was positive.

Spinal tap on admission showed cloudy fluid under increased pressure. Globulin was increased; sugar was reduced to 35 mg. per hundred cubic centimeters; the cell count was 4,700 with 98 per cent polymorphonuclear cells. Smears from the spinal fluid revealed gram-negative bacilli. Both blood and spinal fluid cultures were positive for Hemophilus influenzae. The red blood cell count was 4,500,000, and the white blood cell count was 14,500 with 93 per cent polymorphonuclear cells. Routine urinalysis was negative.

On admission the patient received 30 grains of sulfadiazine followed by a daily maintenance dose of 1 grain (0.065 Gm.) per pound of body weight for seven days, then ½ grain (0.03 Gm.) per pound daily for five days, ⅓ grain (0.02 Gm.) per pound daily for two days and, finally, ¼ grain (0.016 Gm.) per pound of body weight daily for five days. The drug was administered by stomach tube during the comatose stage. A total of 28 Gm. of sulfadiazine was given. The blood level of free drug was 13.8 mg. per hundred cubic centimeters on Dec. 1, 1941. On this date, four days after therapy was instituted, the spinal fluid culture was negative for influenzal bacilli.

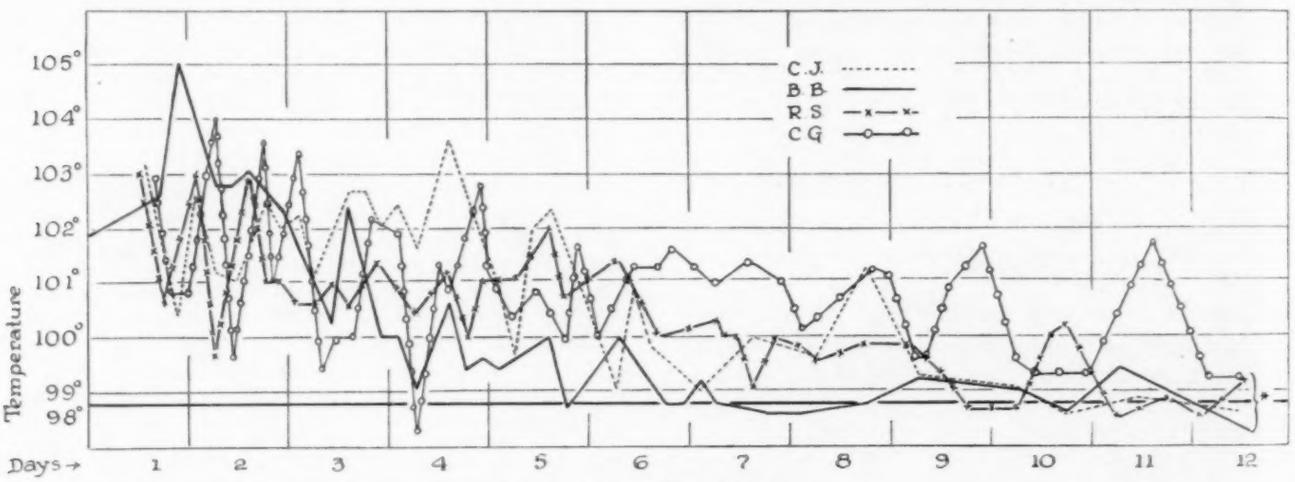
Coma subsided in two days, and the patient became afebrile nine days after the drug was started. His course is indicated in the chart by the crosses and dashes. He was discharged from the hospital twenty-four days after admission.

CASE 3.—C. J., a 15 month old Negro boy weighing 18 pounds (8.2 Kg.) was admitted to the hospital on Dec. 12, 1941 with a two day history of fretfulness, restlessness, inability to sit up or walk, fever, stiffness of the neck and back and bulging of the anterior fontanel. The past history was irrelevant.

The child was malnourished, maldeveloped and anemic. A yellow purulent discharge was found in the right auditory canal. The left drum was normal. The neck was rigid and the anterior fontanel was tense and bulging. Harsh breath sounds were heard over the left side of the chest.

Spinal tap done on admission disclosed a cloudy fluid containing 2,750 cells, chiefly polymorphonuclears. Gram-negative bacilli were seen on smear which on culture proved to be Hemophilus influenzae.

Sulfadiazine 18 grains (1.2 Gm.) was given initially by stomach tube. The maintenance dose was 1½ grains (0.1 Gm.) per pound of body weight daily for seven days, then 1 grain per pound daily for seven days and finally ½ grain per pound daily for ten days. A total of 30 Gm. was administered. On December 15 the drug level in the blood was 25 mg. per hundred cubic centimeters, while the spinal fluid level was 15 mg. per hundred cubic centimeters.



Temperature curves of 4 patients with influenzal meningitis treated with sulfadiazine.

The condition was complicated by bronchopneumonia on the left side of the chest, which was confirmed by roentgen examination. Both the meningitis and the pneumonia responded well to chemotherapy, the temperature returning to normal eight days after admission. His course is indicated in the chart by the dashes. The spinal fluid culture was negative on December 15 and again shortly before discharge on Jan. 2, 1942, twenty-two days after admission.

CASE 4.—C. G., an 8 month old Negro boy infant weighing 18 pounds (8.2 Kg.), was admitted to the hospital on Dec. 28, 1941 with a fever and stiff neck of two days' duration. Examination revealed rigidity of the neck, a bulging and tense anterior fontanel and positive Kernig's sign. The spinal fluid was cloudy, containing 3,000 cells, largely polymorphonuclears. Smear and culture showed the presence of gram-negative bacilli positively identified as Hemophilus influenzae type B.

The patient received an initial dose of 18 grains of sulfadiazine followed by a maintenance dose of 2 grains per pound of body weight daily until the drug was discontinued on Jan. 16, 1942 after nineteen days of administration, at which time the white blood cell count had dropped from 15,000 to 3,700. The child received a total of 46 Gm. of the drug in addition to

60 cc. of intravenous anti-influenzal rabbit serum daily for the first two hospital days and 30 cc. intravenously daily for the subsequent five days. Frequent small blood transfusions were also given.

The patient appeared much improved clinically three days after therapy was started although pursuing a febrile course until the eleventh day of admission. His course is indicated in the chart by the circles and dashes. The spinal fluid was clear on January 9, although culture was still positive for Hemophilus influenzae. When spinal puncture was repeated on January 20, the culture was sterile and cytology normal. The infant was discharged January 23 and has remained well for a period of sixteen weeks following discharge. The leukocyte blood count returned to normal five days after drug therapy was discontinued. Unfortunately sulfadiazine levels were not determined.

CASE 5.—B. W., a 2 year old Negro girl weighing 30 pounds (13.6 Kg.), entered the hospital on Jan. 4, 1942 with a history of having had a cold for one week. On the day of admission a chill developed which was followed by fever. The mother noted that the child had been drowsy the entire day.

Physical examination on admission revealed that the child was acutely ill and in stupor. A mild rigidity of the neck was the outstanding positive finding. Spinal tap gave a cloudy fluid containing 9,600 cells, predominantly granulocytes. The chloride level was 795 mg. per hundred cubic centimeters, the sugar level was 54 mg. per hundred cubic centimeters and smear and culture were positive for Hemophilus influenzae.

On admission the patient received 60 cc. of anti-influenzal serum intravenously. At the same time an initial dose of 22½ grains (1.5 Gm.) of sulfadiazine was given, followed by a maintenance dose of 2 grains per pound of body weight daily for nineteen days and 1 grain per pound of body weight daily for one week. A total of 92 Gm. of sulfadiazine was given over a period of twenty-six days. In spite of this large dose there was no evidence of depression of either the white or red blood cells, which were carefully followed.

The blood level of free sulfadiazine was 25 mg. per hundred cubic centimeters on January 9. The next day the drug level was 20 mg. and 10 mg. per hundred cubic centimeters in the blood and spinal fluid respectively. Blood levels on January 21 and January 29 were 21.5 and 19.3 mg. per hundred cubic centimeters. The spinal fluid culture was negative on January 12.

The patient was much improved clinically twenty-four hours after institution of therapy. She sat up in bed and ate fairly well, although she continued to have a septic type of temperature ranging from 100 to 102 F. rectally until January 23 when it became normal. She was discharged as completely recovered forty-seven days after admission.

CASE 6.—M. L., a 5 month old Negro girl infant weighing 11 pounds (5 Kg.), entered the hospital on Dec. 29, 1941 because of infected third degree burns of both legs and the left arm of three days' duration. She was being treated in the surgical service with continuous saline compresses. Diarrhea developed Jan. 6, 1942 which required parenteral fluids and blood transfusions. The diarrhea was checked on January 10. Since admission the patient ran a septic type of temperature ranging from 100 to 104 F. rectally. On January 14 a bilateral myringotomy was done and purulent material obtained from both ears. Unfortunately this material was not cultured. On January 19 the child appeared much worse than she had previously. Three days later stiffness of the neck and a bulging fontanel were noted. The drainage from the ears had stopped by this time.

A spinal tap done on January 22 revealed a cloudy fluid containing 3,000 cells with 90 per cent polymorphonuclear cells. Numerous short gram-negative bacilli seen on smear were identified on culture as Hemophilus influenzae.

Summary of Available Data on Seven Patients with Influenzal Meningitis Treated with Sulfadiazine at Charity Hospital

		Sulfadiazine				Free Drug Level					
			Maintenance Dose								
Patient, Age	Weight, Pounds	Initial Dose, Grains	Grains per Pound Daily	Days Given	Total Dose, Grams	Blood, Mg./100 Cc.	Spinal Fluid, Mg./100 Cc.	Spinal Fluid Culture	Days of Temperature Elevation	Number of Spinal Taps	Comment
B. B. 3 yrs.	37	30	2 1½	9 10	80	17	11	Negative at 7th day	3	2	Complete recovery
R. S. 3 yrs.	30	30	1 ½ 1/3 1/4	7 5 2 5	28	13.8	.....	Negative at 4th day	9	2	Complete recovery
C. J. 15 mo. Negro	18	18	1½ 1 ½	7 7 10	30	25	15	Negative at 3d day	8	3	Complete recovery
C. G. 8 mo. Negro	18	18	2	19	46	.....	.....	Positive at 12th day; negative at 23d day	11	3	270 cc. serum intravenously; complete recovery
B. W. 2 yrs. Negro	30	22½	2 1	19 7	92	19.3 to 25	10	Negative at 8th day	19	4	Serum 60 cc. intravenously; complete recovery
M. L. 5 mo. Negro	11	11	2½ 2	9 21	48	20.7	9.7	Negative at 5th day; positive at 22d day	?	3	Complicated by burn; chickenpox; premature cessation of therapy; relapse; death
C. K. 7 mo.	14½	15	2	1	15	.....	.....	.....	1	4	300 cc. serum intravenously; died during cistern tap

Sulfadiazine was promptly started with an initial dose of 11 grains (0.7 Gm.), followed by a maintenance dose of 3¾ grains (0.25 Gm.) every three hours for nine days, then 3¾ grains every four hours for twenty-one days. The spinal fluid sulfadiazine level on January 23 was 7.2 mg. of free drug per hundred cubic centimeters. The culture at this time was still positive for influenza bacilli. On January 27, the blood level was 20.7 mg. while the spinal fluid level was 9.7 mg. per hundred cubic centimeters. The spinal fluid culture at this time was negative although the cell count was 240.

The patient was convalescing well except for the burn and a septic type of temperature ranging from 100 to 102 F. Spinal puncture done on Feb. 5, 1942 was normal both as to cells and as to culture. Sulfadiazine was inadvertently omitted on February 11 and 12, and on the following day the child contracted chickenpox. The blood and spinal fluid drug levels on February 13 were 2.39 mg. and 1.95 mg. per hundred cubic centimeters respectively and the cerebrospinal fluid cell count was 3,200, mostly granulocytes. From this time on, in spite of intensive chemotherapy, the course was rapidly downhill and the child died on February 23, fifty-six days after admission to the contagious disease service. An autopsy revealed basilar meningitis, bilateral mastoiditis and left lateral sinus thrombosis.

CASE 7.—C. K., a 7 month old white girl weighing 14½ pounds (6.6 Kg.), was admitted to the hospital on Dec. 28, 1941. The child presented a history of a chill, followed by fever, on Christmas eve. On Christmas day, the patient became drowsy

and stiffness of the neck developed. Coma developed on the day of admission.

Physical examination on admission revealed that the infant was comatose and had an acutely inflamed throat, purulent right otitis media and rigidity of the neck. A consolidation in the right upper lobe was interpreted as bronchopneumonia by roentgen examination.

A spinal tap done shortly after admission disclosed cloudy fluid with Hemophilus influenzae on culture. The child was given an initial dose of 15 grains of sulfadiazine followed by a maintenance dose of 5 grains (0.3 Gm.) every four hours. Sixty cc. of anti-influenzal serum was given intravenously for three days, then 30 cc. intravenously daily until the time of death. Frequent blood transfusions were also given. Since the patient continued to have a septic temperature ranging from 100 to 103 F., a cistern puncture was being done on Jan. 4, 1942, at which time the infant suddenly ceased breathing. Death was due apparently to respiratory failure. An autopsy was not done.

A summary of the essential data presented in the 7 cases is shown in the accompanying table.

COMMENT

Various reports have emanated from Charity Hospital reviewing the cases of influenzal meningitis. Tripoli [4] in 1936 stated that 20 cases of influenzal meningitis seen from 1925 to 1934 were all fatal. Aleman [1] in 1940 reported that from 1935 to 1939 inclusive 27 cases were treated with no recoveries. Bryan and Musser [5] in 1941 remarked that for the past five years there had been 57 cases of influenzal meningitis treated with two recoveries. Forty-five of these cases occurred in children under 3 years of age with one recovery, this being in an infant 11 months old which they reported in detail. This patient received intensive treatment with large doses of sulfapyridine and anti-influenzal serum, forty-eight spinal punctures, numerous blood transfusions and complement intraspinally.

These reports reveal how gloomy the outlook for influenzal meningitis may be. The superior results that were secured with sulfadiazine in our small series of 7 cases seen within the past few months at Charity Hospital are extremely gratifying. Stupor and coma disappeared within thirty-six to forty-eight hours in all instances which responded favorably, and the spinal fluid cultures became sterile in an average of five days (range three to twenty-three days?) after the institution of drug therapy.

The series is too small to permit final conclusions. Nevertheless, the dramatic response to sulfadiazine of 5 out of 7 patients under 4 years of age can hardly be attributed to chance. One fatality which occurred is unfortunate, since recovery might have ensued if cistern puncture had not been done. We feel that this fatal issue can be attributed with reasonable certainty to the surgical procedure employed. Premature cessation of drug therapy in the other fatal case is also unfortunate.

Because of its easy absorption, low toxicity, ready secretion into the cerebrospinal fluid, relatively small degree of acetylation, slow excretion, its property of remaining in the blood stream in high concentration and its superior bacteriostatic properties against the common pyogenic organisms, sulfadiazine would seem to be the drug of choice to use in purulent meningitis. Our experience lends some support to this view. All our patients tolerated the drug well. No vomiting or nausea was encountered, and the only toxic condition referable to the drug was a moderate degree of leukopenia which developed in 1 case. Furthermore, relatively high and sustained concentrations of sulfadiazine in the blood and cerebrospinal fluid were obtained with ease. These factors combined with the observed recovery of 5 of our 7 patients indicate to us that sulfadiazine is particularly efficacious in the treatment of influenzal meningitis.

The intravenous use of the sodium salt recommended by Long and Marshall [6] in meningitis was not utilized in this study, since excellent absorption occurred when sulfadiazine was administered orally or by stomach tube. Theoretically, the intravenous administration would seem advisable in order to build up high blood and spinal fluid concentrations rapidly. In the future we plan to give an initial dose of sodium sulfadiazine by this route.

It is unfortunate that sulfadiazine levels in the blood and spinal fluid were not followed closely in our series of patients. It is significant, however, that the blood concentration of the free drug under maximum dosage was always above 10 mg. per hundred cubic centimeters and was sometimes as high as 25 mg. per hundred cubic centimeters, with an average of 20 mg. Spinal fluid concentration of the drug in the cases in which this was determined ranged from 9.7 to 15 mg. per hundred cubic centimeters. We are inclined to attribute our recent success in treating influenzal meningitis chiefly to the relatively high cerebrospinal fluid levels of sulfadiazine that were obtained.

Spinal punctures and drainage were done infrequently in our series because of the prompt clinical improvement of all patients who recovered. Our experience indicates tentatively that influenzal meningitis can be treated successfully without resort to frequent spinal punctures when sulfadiazine is given in liberal amounts.

Our experience with these few cases also seems to indicate that sulfadiazine alone was just as efficacious as the combined treatment with anti-influenzal serum. Previous unfavorable experience with serum therapy leads us to presume that the important factor in the recovery of our 5 cases was the new drug.

As far as we are aware there are no reports in the literature relative to the use of sulfadiazine in influenzal meningitis.[6a] Long [7] and others [8] fail to recommend this new drug in the treatment of this condition owing perhaps to the recency of its introduction and to the scarcity of reported cases. Further studies by other investigators for purposes of confirming or properly evaluating our results are to be desired.

It is tentatively suggested that during the acute stage of influenzal meningitis large doses of the drug should be administered so that the blood levels are always above 10 mg. per hundred cubic centimeters of the free drug, preferably 15 to 20 mg. per hundred cubic centimeters, and that the spinal fluid drug level is maintained around 10 mg. per hundred cubic centi-

4. Tripoli, C. J.: Bacterial Meningitis: A Comparative Study of Various Therapeutic Measures, J. A. M. A. **106**: 171-177 (Jan. 18) 1936.

5. Bryan, M. S., and Musser, J. H.: Influenzal Meningitis: The Successful Treatment of a Case in an Infant, New Orleans M. & S. J. **94**: 188-190 (Oct.) 1941.

6. Marshall, E. K., Jr., and Long, P. H.: Intravenous Use of Sodium Sulfapyridine, J. A. M. A. **112**: 1671-1675 (April 29) 1939.

6a. Since this article was submitted for publication a recovery has been reported (Scott, E. P., and Bruce, J. W.: J. Pediat. **20**: 499-502 [April] 1942).

7. Long, P. H.: Clinical Use of Sulfonamide Compounds in Prophylaxis and Treatment of Infections, Northwest Med. **40**: 311-321 (Sept.) 1941.

8. Finland, Maxwell and Dingle, J. H.: Treatment of Meningitis, New England J. Med. **225**: 825-832 (Nov. 20) 1941. Alexander, H. E.: Treatment of Bacterial Meningitis, Bull. New York Acad. Med. **17**: 100-115 (Feb.) 1941. Keefer, C. S.: The Treatment of Bacterial Meningitis, M. Clin. North America **25**: 1287-1315 (Sept.) 1941.

meters or higher. We believe that after an apparent cure has been obtained the patient should be maintained on reduced doses of the drug for at least two additional weeks.

SUMMARY

Seven children under 4 years of age with influenzal meningitis have been treated at Charity Hospital in the past few months with sulfadiazine. Five of these patients have been discharged as cured and have remained well without residuals during a follow-up period of four months. Three of these recoveries occurred with drug therapy alone, while the other 2 patients received both antiserum and the drug. Two fatalities occurred in young infants 7 and 5 months old respectively, one following a cistern puncture and the other after a prolonged course complicated by severe infected burns, chickenpox and bilateral mastoiditis with left lateral sinus thrombosis.

Clinical response to sulfadiazine was most dramatic and prompt in all cases in which recovery occurred.

Very few spinal punctures and drainages were performed.

Leukopenia, which developed in 1 patient, was the only toxic condition encountered that can be attributed to the drug.[9]

DIFFUSE COLLAGEN DISEASE

ACUTE DISSEMINATED LUPUS ERYTHEMATOSUS AND DIFFUSE SCLERODERMA

PAUL KLEMPERER, M.D.
ABOU D. POLLACK, M.D.
AND
GEORGE BAEHR, M.D.
NEW YORK

The thesis of Morgagni that diseases reside in certain organs of the human body has dominated pathologic anatomy and clinical investigation for centuries. Every diagnostic endeavor was directed toward establishing the fundamental organ disease. No doubt, this working hypothesis has been the cornerstone on which rests the edifice of modern medicine.

The great advance of medicine throughout the nineteenth century is essentially founded on the method of correlating observations made in the hospital ward with those at the postmortem table. This clinicopathologic concept was further advanced by the recognition of an interdependence and unity of certain organs to form organ or tissue systems. Diseases of the hemopoietic or of the reticuloendothelial system represent such an extension of the scope of organ pathology. Nevertheless, one cannot justly maintain that an essential site is established in every disease. A number of acute infections and intoxications do not produce characteristic or even significant lesions in any organ. Pathologic anatomy cannot therefore make any fundamental contribution; the exact nature of these maladies will be disclosed only by investigations into etiology and the examination of functional derangements. Another difficulty with the theory of Morgagni arises from the fact that in certain maladies, such as rheumatic fever, apparently unrelated organs are the sites of the morbid process.

Recent anatomic investigations of disseminated lupus erythematosus have offered a similar problem in that conspicuous gross and microscopic changes were observed in various organs such as the heart, kidneys and skin. The question arose as to which of these organ changes were of primary and fundamental significance—in other words, which represented the seat of the disease, in the sense of Morgagni.

For rheumatic fever it has been shown by Klinge [1] that the pathognomonic involvement of the joints and of the heart is initiated by a characteristic alteration of the connective tissue followed by a specific granulomatous phase, the Aschoff nodule. Subsequent detailed investigations by this author and his school have revealed that the morbid process in rheumatic fever is not limited to these sites but affects the connective tissues throughout the body.

The apparently heterogeneous organ lesions in disseminated lupus erythematosus have similarly been shown to be the result of a fundamental alteration of the collagenous tissues. These collagen alterations are in most individual observations more widespread and conspicuous than those in rheumatic fever, affecting with particular frequency the collagen framework of the heart and of small blood vessels and capillaries, especially those of the kidneys. The connective tissue of the mediastinum and of the retroperitoneal space may also be affected by the morbid process. It is reasonable, therefore, to consider these maladies as systemic diseases of the connective tissues. The justification for the concept of a systemic disease of the connective tisssues depends on the actual existence of a connective tissue system.

A system is, in the biologic sense, according to definition, an assemblage of organic structures composed of similar elements and combined for the same general functions. The connective tissue proper can then justly be regarded as a system because it consists throughout the body of an association of similar cellular and fibrillar elements held together by a third component, an amorphous ground or cement substance. The colloidal nature of this ground substance has been stressed by Schade.[2] Obviously these elements are combined not only for the general function of support but also for other fundamental functions. Interposed between the parenchymal cells and the canalicular blood and lymph spaces of the body, the connective tissues not only serve as the site of transfer of metabolites but most actively serve the body economy in other ways; for example, by the regulation of salt and water balance. An understanding of the colloidal nature of the extracellular portion of the connective tissues is necessary to an analysis of these functions. The same knowledge is imperative for an appreciation of the responses of the connective tissues in degeneration and inflammation. Until recently, approach to these morbid processes has been almost entirely in terms of the cellular reaction within the connective tissues. However, the participation of the fibers and ground substance may occasionally overshadow the cellular reaction. For example, in some persons an injury of the connective tissue results

9. The Tulane and Independent Services of Charity Hospital gave permission for inclusion of 3 of their cases in this report.

From the Laboratories of the Mount Sinai Hospital, New York.

1. Klinge, F.: Ergebn. d. allg. Path. u. path. Anat. **27**: 1, 1933.
2. Schade, H.: Die physikalische Chemie in der inneren Medizin, Dresden & Leipzig, Theodor Steinkopff, 1923.

in the excessive production of collagenous fibers and ground substance known as keloid.

We first became aware of the disorder of the connective tissue as a system in our studies of disseminated lupus erythematosus.[3] The apparent heterogeneous involvement of various organs in this disease had no logic until it became apparent that the widespread lesions were identical in that they were mere local expressions of a morbid process affecting the entire collagenous tissue system. The most prominent of these alterations is fibrinoid degeneration—a descriptive morphologic term indicating certain well defined optical and tinctorial alterations in the collagenous fibers and ground substance. The straightening and thickening of the collagen fibers, their apparent friability, their intense eosinophilia and refractibility, together with visible increase in the ground substance can be due only to a profound physicochemical aberration of the colloid state of the connective tissues.

A similar widespread alteration of collagen has also been noted in certain cases of diffuse scleroderma.[4] Here, however, the collagen disturbance is manifest not only as fibrinoid degeneration but also as an increase in the bulk and density of the connective tissue. On the other hand, this sclerosing type of lesion has also been observed in disseminated lupus erythematosus (spleen, pericardium, retroperitoneal tissues). It is evident, then, that fibrinoid degeneration and collagen sclerosis are the morphologic expression of different phases of a disturbed colloidal collagen system.

In these two diseases morphologic alterations may in the individual case be indeed striking. But even here the changes are hardly crucial enough to account for the profound clinical debasement and death of the patient. This is even more impressive in some cases in which the characteristic morphologic indexes of a systemic collagen disturbance are discoverable only after the most minute search. How can one account for such a discrepancy? It is unlikely that other tissue alterations have been overlooked or not comprehended. In the fully developed case the morphologic signs of implication of the collagenous tissues are quite clear. The fact of total involvement of the collagen tissue system is also clear. Can we assume, therefore, that a derangement of the colloidal state of the entire collagenous system exists, though it cannot consistently be revealed by our histologic methods? Such an assumption has already been made by MacCallum[5] in the analysis of a case of acute scleroderma occurring in an 18 year old boy. Furthermore, the spectacular clinical state observed in scleredema adultorum (Buschke) can be accounted for only by a similar assumption. The hardening of the skin in this disease is far out of proportion to the demonstrable histologic alteration. Moreover, the clinical reversibility of the condition lends credence to the view that the alteration is due to a transient colloidal imbalance within the collagenous tissues.

With these considerations in mind, it must become quite clear that one may regard the connective tissues of the body as a whole as a well defined, widely dispersed colloidal system liable to a variety of injuries. We are concerned here only with those processes which affect the system in its entirety. Among these are acute disseminated lupus erythematosus and certain cases of diffuse scleroderma. There are, indeed, other morbid processes which, when analyzed, are also found to affect the connective tissue system. However, to identify this system as the seat of certain diseases is by no means to identify these diseases with one another or even to relate them. This would be an unjustifiable oversimplification.

Klinge[1] has charted most completely the widespread involvement of the connective tissues in rheumatic fever. Here too the seat of the disease is found in the connective tissues of the body as a whole, although those of the heart exhibit the greatest disturbance. There is in rheumatic fever, as in disseminated lupus erythematosus and in diffuse scleroderma, not only widespread involvement of the connective tissues but also similar alteration of the extracellular components of these tissues—fibrinoid degeneration. However, there are such clearcut differences in the localization and evolution of the characteristic lesions in these diseases that they must be strictly separated. Thus the glomerular lesions in disseminated lupus erythematosus and in diffuse scleroderma are never seen in rheumatic fever; the vascular lesions in the latter rarely achieve such intensity as in the former diseases. Finally, and most important, the development of a specific granulomatous phase—the Aschoff nodule—occurs neither in disseminated lupus erythematosus nor in diffuse scleroderma.

Roessle[6] and Jaeger[7] have proposed that fibrinoid degeneration of collagen is a characteristic and constant morphologic feature of diseases of allergic or "pathergic" background and have proposed that such diseases (rheumatic fever, periarteritis nodosa and thromboangiitis obliterans) may be considered in a single group designated as the "rheumatische formenkreis." Masugi and Yä-Shu,[8] therefore, having found fibrinoid degeneration widespread within the blood vessels in a case of diffuse scleroderma, suggested that this disease also fell into the same category. This, we believe, is both unjust and unwise. In the first place there has been no universal acceptance of the allergic nature of rheumatic fever, the prototype of the group. Secondly, although it has been shown experimentally (Gerlach,[9] Klinge[10]) that hyperergic inflammation is characterized by fibrinoid degeneration of collagen, the converse does not necessarily follow, that widespread fibrinoid degeneration always indicates a state of hypersensitivity. We know that local fibrinoid degeneration of collagen is found in a variety of states not related to hypersensitivity. It is reasonable to assume, therefore, that widespread collagen degeneration may also be the result of causes other than hypersensitivity. In fact, the predominant incidence in females of acute disseminated lupus erythematosus and diffuse scleroderma speaks against hypersensitivity as the sole mechanism.

Until now an inordinate preoccupation with immediate cause has shut the door to an analysis of the fundamental changes within the connective tissues considered as a colloid system. The connective tissues having been established as the seat of certain diseases, it remains for the investigator to explore this system with the methods available to the biophysicist and the chemist.

3. Klemperer, Paul, Pollack, A. D., and Baehr, George: Pathology of Disseminated Lupus Erythematosus, Arch. Path. **32**: 569 (Oct.) 1941.
4. Pollack, A. D.: Visceral and Vascular Lesions in Scleroderma, Arch. Path. **29**: 859 (June) 1940; article in preparation.
5. MacCallum, W. G.: Tr. A. Am. Physicians **41**: 190, 1926.
6. Roessle, R.: Virchows Arch. f. path. Anat. **288**: 780, 1933; Klin. Wchnschr. **15**: 809, 1936.
7. Jaeger, E.: Virchows Arch. f. path. Anat. **284**: 526, 1932.
8. Masugi, M., and Yä-Shu: Virchows Arch. f. path. Anat. **302**: 39, 1938.
9. Gerlach, W.: Virchows Arch. f. path. Anat. **247**: 294, 1923.
10. Klinge, F.: Beitr. z. path. Anat. u. z. allg. Path. **83**: 186, 1929.

MYCOTIC ENDOCARDITIS

REPORT OF A CASE

ABRAHAM WIKLER, M.D.
Passed Assistant Surgeon (R.), U. S. Public Health Service

EDWIN G. WILLIAMS, M.D.
Surgeon, U. S. Public Health Service

EUGENE D. DOUGLASS
Senior Medical Technician, U. S. Public Health Service
LEXINGTON, KY.

AND

C. W. EMMONS, PH.D.
Senior Mycologist, U. S. Public Health Service

WITH HISTOLOGIC REPORT BY
R. C. DUNN, M.D.
Passed Assistant Surgeon, U. S. Public Health Service
BETHESDA, MD.

Endocarditis due to fungi is an exceedingly rare clinical entity. Joachim and Polayes [1] described a case of subacute endocarditis with systemic mycosis (moniliasis) in a drug addict and referred to another case in which autopsy revealed evidence of mycotic endocarditis. The following case, also in a drug addict, is similar in many respects to that of Joachim and Polayes and is considered worthy of reporting because of its apparent rarity, and because of its possible public health importance, since these cases occurred in drug addicts.

A white man aged 49 was admitted to the United States Public Health Service Hospital on May 11, 1940 for treatment of drug addiction (heroin) which dated from 1914. His previous medical and personal history showed nothing relevant to the present report. Physical examination on admission was negative except for many missing and some artificial teeth, defective vision and hemorrhoids. Serologic tests for syphilis were reported positive on two successive examinations after admission. He received six weekly injections of bismuth beginning June 25 and two injections of arsphenamine beginning August 13. The patient had no complaints until the afternoon of August 26, at which time he suddenly became mentally confused and what appeared to be hemiplegia on the right side developed. He was then admitted to the neuropsychiatric service. He did not lose consciousness. Neurologic and psychiatric examinations revealed considerable clouding of the sensorium, especially in the fields of orientation, memory, retention and recall. There was a partial nominal aphasia, together with an inability to write spontaneously with retention of ability to spell and copy. There was a right lower facial weakness on voluntary innervation, deviation of the tongue to the right on protrusion and a right upper monoparesis, which was more severe in the hand. The abdominal reflexes were likewise diminished on the right side and the plantar response was absent on the right. In addition, the patient exhibited a moderately severe anemia and clubbing of the fingers and toes. The spleen was considerably enlarged. Examination of the heart revealed a loud apical systolic murmur transmitted to the axilla, with regular rhythm and sounds of good quality. The temperature was about 38.5 C. (101.5 F.) for the first few weeks of the illness; following this there was an afebrile period of about two weeks.

Urinalysis was essentially negative; a blood count disclosed rather severe anemia of the secondary type. Lumbar puncture yielded a clear, colorless fluid with normal pressure and normal manometric responses. Laboratory examination of the fluid revealed 80 cells, of which 71 per cent were polymorphonuclear. Protein was 0.32 Gm. per liter; the reaction for sugar was negative, as were the Kahn and the Kolmer test. The colloidal gold curve was 0001100000. A recheck on the blood serum reaction revealed a 4 plus Kahn, 2 plus Kline exclusion, doubtful Kline diagnostic and positive Kolmer reaction.

The patient's aphasia disappeared almost completely after a few days and there was decided improvement in the sensorium. The other neurologic and physical conditions remained essentially the same. Lumbar puncture was repeated on September 18 and the following results were obtained: cell count 18, predominantly lymphocytes; protein 0.26 Gm. per liter; sugar too low to be read; Kahn and Kolmer reactions negative; colloidal gold test 1122100000; chlorides 706 mg. per hundred cubic centimeters. A roentgenogram of the chest was reported to be negative except for a slight prominence in the region of the pulmonary conus. The differential diagnosis at this time was between cerebrovascular syphilis with thrombosis of the left middle cerebral artery and embolism of the same vessels secondary to the cardiac mitral disease. Treatment consisted of iodides by mouth, bismuth, general supportive therapy, iron and liver extract.

In spite of these measures the patient grew progressively weaker, and although no new focal symptoms appeared and his course was almost constantly afebrile the possibility of subacute bacterial endocarditis was entertained. Blood cultures were taken on two occasions and yielded in both instances a yeastlike growth which was subsequently demonstrated to be Candida (Monilia) parakrusei. Culture of the spinal fluid yielded no organisms of any kind. On October 29 petechial hemorrhages were discovered in the right lower eyelid and in the right retina.

Although the patient's focal neurologic signs improved somewhat, his general condition grew progressively worse. Transfusions of 500 cc. of citrated whole blood were given on October 30 and November 15 without any improvement. Lumbar puncture was done again on October 23, and the spinal fluid, which was clear, showed 10 cells (90 per cent lymphocytes), protein 0.20 Gm. per liter, sugar positive, chlorides 691 mg. per hundred cubic centimeters and culture negative for yeast or other organisms. Repeated blood cultures, however, continued to yield the yeastlike organism. Streptococcus viridans was not found. A mouse inoculated intraperitoneally with a culture of the yeastlike organism died on the eleventh day, and cultures of its brain and peritoneal washings yielded the same yeastlike organism. On October 31 urinalysis revealed 3 plus albumin and occult blood. Yeast cells were seen in the urine and cultured therefrom. His blood nonprotein nitrogen at this time was 30.9 mg. and sugar 95 mg. per hundred cubic centimeters. Intravenous pyelography showed nothing abnormal except ptosis of both kidneys.

About this time the patient began to exhibit a septic type of temperature curve, the peaks varying from 38 to 39.5 C. (100.4 to 103.1 F.). The blood count, however, continued to show anemia (hemoglobin 65 per cent, red blood cells 3,430,000) and normal white count (7,000 to 9,000) with slight neutrophilic predominance (70 to 75 per cent). Iodides up to 1 drachm (4 Gm.) of saturated solution of potassium iodide three times a day and 1 Gm. of sodium iodide intravenously twice daily were given without effect. Sulfathiazole (1 Gm. first dose, followed by 0.5 Gm. every four hours thereafter) was given from November 6 to November 11 inclusive. The temperature dropped, but since the patient grew much weaker and the white count dropped to 2,500 this treatment was discontinued. Numerous petechiae appeared over the extremities and back and the patient gradually became semistuporous. Neurologic examination was negative except for weakness in the right lower part of the face, some spasticity of the right upper extremity and a positive Hoffman sign on the right. The deep reflexes were now depressed symmetrically throughout. On November 20 the patient was difficult to arouse but conscious and well oriented after being aroused. The breath sounds were muffled and respirations were labored. There was pitting edema of

From the United States Public Health Service Hospital, Lexington, Ky., and National Institute of Health, Bethesda, Md.

1. Joachim, Henry, and Polayes, S. H.: Subacute Endocarditis with Systemic Mycosis (Monilia), J. A. M. A. **115**: 205-208 (July 20) 1940.

the hands and feet (although the patient had been digitalized), and numerous rales were found throughout the right lung. The white count was 26,700 with 75 per cent polymorphonuclear leukocytes and the temperature was normal (later subnormal). The patient's condition became rapidly worse and he died about 4 p. m. November 22.

The clinical diagnoses were: (1) drug addiction (heroin) without psychosis; (2) cardiac disease, valvular, mitral stenosis; (3) heart disease, endocarditis, subacute bacterial (?) yeast (?); (4) embolism, cerebral, multiple, due to heart disease; (5) syphilis, tertiary, latent (?); (6) perforation, septum of perichondrium and cartilage of nose; (7) pneumonia, lobular, right; (8) pericarditis with effusion, acute, due to heart disease.

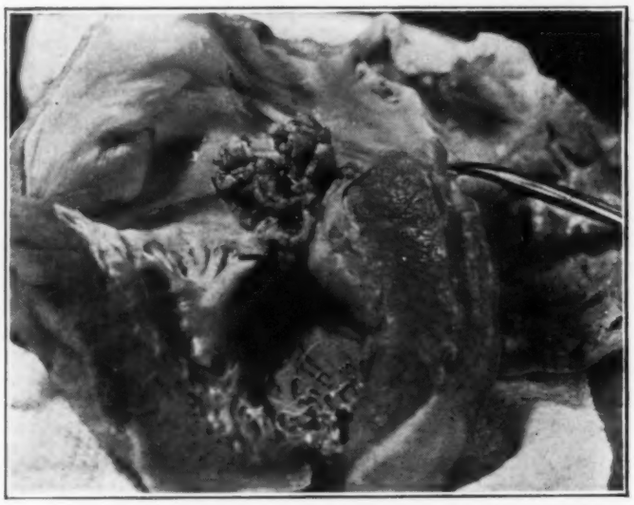


Fig. 1.—Appearance of vegetation, grossly indistinguishable from the vegetations seen in bacterial endocarditis.

POSTMORTEM EXAMINATION

There were many areas of petechial hemorrhage into the skin, especially on the legs and hands. Some of these were pustular.

The lungs were mottled with reddish discoloration throughout, but more especially in the lower lobes. On cross section blotchy areas of moist, rather soft consolidation were seen. Blood tinged frothy fluid exuded from the cut surface. Although both lungs showed these changes, they were more pronounced and more extensive in the right lung. Histologic Report: "The moderately congested parenchyma showed many medium sized areas, often surrounding pus-filled bronchi, with alveoli distended by fibrinocellular exudate in which neutrophils predominated, lymphocytes and macrophages being present in small numbers. The latter usually contain granular brown pigment. Most of the remaining alveoli contained a few erythrocytes, little serum and few leukocytes."

The pericardium was distended with fluid. Blood aspirated from the heart yielded a yeastlike organism on culture. The pericardium was smooth and glistening throughout. The heart was not enlarged. There was some subepicardial scarring along the arterial tree and some not adjacent to the larger vessels. The musculature and valves of the right side of the heart were grossly normal. The aortic valve and the musculature of the left side of the heart were grossly normal. There was a large friable vegetative growth measuring about 3 by 3 cm. attached to the mitral valve (fig. 1). The valve leaflets were greatly thickened and the chordae tendineae were thickened and shortened. Histologic Report: "The mitral valve leaf was about 2 mm. thick near its base, gradually becoming thicker as it extended downward parallel to the ventricular endocardium for a distance of 8 mm. and here fused with mural endocardium, the two structures merging in a 10 by 15 mm. fibrous scar. The scarred valve showed focal areas of necrosis infiltrated by many macrophages and few neutrophils and lymphocytes. Some of these foci abutted on thrombosed thin walled vessels. The valve surface was covered by a thick, firmly adherent layer of fibrinocellular exudate which contained small to medium size dense clumps of spores, usually near the surface. There were a few isolated spores, some in phagocytes, some free in the fibrin. They were gram negative, 1.2 to 2.5 microns in diameter, having a moderately distinct basophilic limiting membrane and lightly basophilic structureless central area and contained one or two deeply basophilic, usually eccentric granules. The auricular endocardium adjacent to the base of the mitral valve showed fibrous thickening, was covered by a thin layer of fibrin and was infiltrated by few to many lymphocytes. The myocardium showed slight patchy interstitial lymphocyte, plasma cell and neutrophil infiltration. The epicardium showed slight patchy fibrosis."

The spleen was considerably enlarged (weight 770 Gm.). The capsule was smooth but stripped with some difficulty. Toward the posterior pole and situated somewhat inferiorly there was an old organized infarct. In several other places there were more recent, rather firm, reddish, irregularly shaped infarcts of varying size and stage of organization. Histologic Report: "There was a subcapsular area, 15 mm. by 10 mm., of hemorrhagic infarction with slight marginal fibroblast proliferation and collagen deposition. The red pulp showed a slight diffuse increase in numbers of medium size and large lymphoid cells, a few scattered neutrophils and macrophages, the last occasionally exhibiting erythrophagia. Follicles were medium size and their reticulum cells were swollen and had homogeneous oxyphilic cytoplasm." Histologically the bone marrow showed that "erythropoiesis and granulocytic maturation appeared moderately depressed."

The left kidney showed no gross abnormality other than rather general reddish mottling in the cortex, which possibly represented multiple minute infarcts. The right kidney contained an infarct 15 by 30 mm. in its upper pole. Histologic Report: "The moderately congested parenchyma showed few small subcapsular and midcortical, triangular and stellate areas of fibrosis with tubular atrophy, glomerular fibrosis and slight lymphocyte infiltration. Many collecting and convoluted tubules contained hyaline and granular casts. Medulla contained many small, radially elongated abscesses. Both cortex and medulla showed slight patchy interstitial fibrosis, and small arteries showed moderate sclerosis. In the cortex there was a 10 by 25 mm. area of infarction showing moderate peripheral fibrosis. Scattered throughout this necrotic tissue there were many small, densely scarred foci in which atrophic tubules and fibrosed glomeruli were recognizable."

Fig. 2.—Area of softening involving the superior portion of the putamen and the adjacent lateral portion of the internal capsule.

The calvarium was removed and a sample of cerebrospinal fluid was aspirated and yielded the yeastlike organism on culture. The meninges were moderately distended by a slightly turbid fluid. The pial vessels were moderately dilated. The

leptomeninges were slightly opaque and adherent over the superior longitudinal sinus bilaterally. The base of the brain and the vessels of the circle of Willis were grossly normal. Coronal sections were made at intervals of 1 cm. On the left side at the level of the insula there was a yellowish necrotic area of softening measuring 20 by 8 by 15 mm. (fig. 2) involving the superior portion of the putamen and the adjacent lateral portion of the internal capsule. The lumens of several small branches of the middle cerebral artery in the neighborhood of the softened area were occluded and slightly distended by clotted blood, giving the appearance of antemortem thrombosis or embolism. In the region of the right parieto-occipital sulcus, just below the gray matter, there was a hemorrhagic area about 2 cm. in diameter. The other regions presented no pertinent abnormalities. Histologic Report: "There were several types of lesions, the most significant being two small areas of softening in different stages of degeneration. The most recent lesion, occurring at the junction of the white matter and cortex, showed a central blood clot containing hematoidin marginated by an ill defined zone of stringy fibrillary material, and moderate numbers of lymphoid and foam cells; external to this the brain showed a broad, poorly defined zone infiltrated by many hypertrophied astrocytes. Another block showed an older linear necrotic spongy area from which all nerve cells had disappeared, surrounded by a narrow zone of slightly spongy brain tissue and many hypertrophied astrocytes. Besides these areas of softening smaller lesions occurred. Many vessels showed perivascular infiltration by lymphocytes, plasma cells and few macrophages; the latter often contained a small amount of granular pigment stained green with eosin methylene blue. Near apparently occluded capillaries in brain parenchyma there were small areas of destruction in ground substance with few microglia and astrocytes. Occasionally, chiefly in the gray matter, there were sharply defined granulomatous lesions composed of about a dozen closely packed mononuclear and epithelioid cells. No definitely recognizable spores were seen."

MYCOLOGIC REPORT

In identification of species of Candida the laboratory procedures followed at the National Institute of Health include a study of the colony characteristics and microscopic morphology on acid dextrose agar, deeply inoculated cornmeal agar plates, and sometimes blood agar. The character of the growth in acid dextrose broth after incubation at 37.5 C. for forty-eight hours and the fermentation reactions under the conditions outlined by Martin and his associates[2] are also carefully observed. For the identification of the strain described here, levulose and raffinose were included in addition to the sugars used by those investigators. Langeron and Guerra's monograph[3] was also consulted for descriptions of species of Candida.

In subcultures made when the fungus was first received two types of colonies differing slightly in appearance were observed. The two types were isolated and carefully compared. They differed slightly in the amount of gas formed in dextrose and levulose fermentation tubes and in the amount of sediment deposited on the sides and at the bottom of the tube in broth cultures, but these differences were not significant.

On acid dextrose agar (modified Sabouraud's agar—dextrose 4 per cent, neopeptone 1 per cent, agar 2 per cent, p_H 5.5) the fungus forms bluish white, glistening, slightly raised colonies with entire margins. In acid dextrose broth incubated at 37.5 C. for forty-eight hours no surface film or ring was formed. The broth was clear and a flocculent deposit settled on the sides and at the bottom of the culture tube. On blood agar plates incubated at 37.5 C. for ten days colonies were gray, smooth, glistening, low dome-shaped, 2 to 3 mm. in diameter, with entire borders. Colony characteristics of species of Candida on blood agar, in our experience, have not paralleled those described by Martin and his associates.

On cornmeal agar plates yeastlike growth was not conspicuous, but the few yeastlike cells on the agar surface appeared slightly brownish under the microscope, resembling similar cells of Candida albicans. Hyphal growth was greatly restricted, no grossly visible zone of hyphae appearing along the streak in cornmeal agar. Microscopically the hyphae were short and profusely branched, clusters of short stubby branches being borne in some cultures. These clusters also suggested some resemblance to C. albicans, but unlike most strains of that species hyphal growth was greatly restricted and no chlamydospores were produced. In petrolatum sealed sugar containing broth, incubated at 37.5 C. for ten days, acid and small amounts of gas were produced in dextrose and levulose, neither acid nor gas in sucrose, lactose, maltose and raffinose. The organism was not pathogenic for rabbits even in large doses. Some animals were given repeated intravenous inoculations but lesions were not apparent when the animals were killed. Sections of the heart valves of repeatedly inoculated rabbits were normal.

The characteristics of this strain of fungus, as outlined, are those of Candida parakrusei (Monilia parapsilosis).

There are slight differences between this strain and some published descriptions of the species, as well as between different published descriptions. Some strains of C. parakrusei, for example, produce hyphae on cornmeal agar more freely and some produce a faint ring at the surface of dextrose broth when tubes are heavily inoculated. Some discrepancies are no doubt due in part to slight differences in culture mediums and in technic of handling. The actual differences between strains and the changes which are sometimes observed in a given strain over periods of time when in laboratory culture are, however, proof of a degree of instability clearly manifested also in other species of Candida.

This strain has been compared with three other strains of C. parakrusei also isolated from drug addicts with subacute endocarditis and sent to this laboratory for study and identification. The first strain was submitted by Dr. S. H. Polayes, whose report of the case has been mentioned. A final report on this case is being published.[4] Two strains were received from Dr. Milton Helpern and Dr. A. S. Weiner, one of these having been very recently isolated. These strains were essentially alike in fermentation reactions and morphology, the differences previously mentioned being too slight to suggest any need for specific separation. The Lexington strain was also compared with a strain of C. parakrusei furnished by Dr. Rhoda Benham. That strain presented some morphologic differences which could have been due to mutations occurring during its maintenance as a stock culture. A fifth fungus isolated from subacute endocarditis, the patient in this instance also being a drug addict, was received for identification from Dr. Thomas M. Peery, George Washington University School of Medicine, who will report the case. This fungus differed from C. parakrusei by fermenting with gas production sucrose and raffinose as well as dextrose and levulose. There were also important morphologic differences, and the organism was identified in this laboratory as Candida guillermondi.

COMMENT

It is extremely interesting that within the past two years 5 cases of mycotic endocarditis should be recognized in drug addicts, 4 being due to C. parakrusei and 1 to a related fungus, C. guillermondi. It is obviously more than mere coincidence that all the patients were drug addicts who took heroin intravenously. The question arises whether C. parakrusei is a common contaminant of heroin or of its adulterants. Joachim and Polayes reported that in their case an organism similar

2. Martin, D. S.; Jones, C. P.; Yao, K. F., and Lee, L. E., Jr.: A Practical Classification of the Monilias, J. Bact. **34**: 99-129 (July) 1937.
3. Langeron, Maurice, and Guerra, Paul: Nouvelles recherches de zymologie médical, Ann. de parasitol. **16**: 36-84 (Jan. 1), 162-179 (March 1), 429-476 (Sept. 1), 481-525 (Nov. 1) 1938.
4. Polayes, S. H., and Emmons, C. W.: Final Report on the Identification of the Organism of the Previously Reported Case of Subacute Endocarditis and Systemic Mycosis (Monilia), J. A. M. A. **117**: 1533-1534 (Nov. 1) 1934.

to the one isolated from blood was isolated from the container which had held the patient's heroin.

An attempt was made by one of us (C. W. E.) at the National Institute of Health to learn whether C. parakrusei is a common contaminant of heroin or its adulterants. Eleven samples of heroin were obtained from Dr. J. Walter McDonald of the Drugs Disposal Committee, Bureau of Narcotics. These samples, according to the analyses recorded on the packages, contained as adulterants sugar (specific sugar not specified), cinchona alkaloids, mannitol, starch, brucine, procaine, quinine, sucrose, procaine hydrochloride, lactose or sucrose, or some combination of these. Repeated attempts to isolate Candida in cultures from the heroin samples failed, although cultures of several other fungi were obtained. The number of samples tested was not large, but we believe that the samples are representative as to source and adulterants, and the failure to isolate Candida probably indicates that it is not a common contaminant of heroin. It would seem possible that the source of the organism in these cases was a contaminated batch of heroin which was rather widely distributed among drug addicts.

Another possible source of the fungus is the patient's skin. Langeron and Guerra state that this species is frequently found on the surface of the skin, especially about the nails, without, however, causing onychia or paronychia. Castellani isolated it from sputum. Martin and his associates isolated it from the vagina, throat, sputum and skin. Since the fungus may, therefore, be present on the skin and mucous membranes, it is possible that these patients introduced the fungus into the vein by accident at the time the drug was administered by them.

The question of primary bacterial endocarditis with superimposed mycotic infection is raised by Joachim and Polayes. There is no evidence that bacterial infection played any role in our case, and the clinical picture, which so closely resembles their case, appears to be characteristic of the disease.

Of especial interest in this case are the neurologic manifestations. Clinically, these indicated a focal brain lesion and, in view of the discovery of a yeastlike organism in the blood, suggested the possibility of torulosis. Subsequent mycologic studies, however, showed that the etiologic agent did not resemble Torula histolytica. As Jacobson [5] has pointed out, this type of infection can give rise to almost any type of neurologic picture, although usually signs of meningitic involvement predominate. The spinal fluid appeared to be characteristic of mycotic infection of the central nervous system in general.[6] Subsequent to this patient's death, Anderson [6] reported a series of 4 cases of brain abscess due to fungous infection, in 2 of which the cerebrospinal fluid findings closely resembled those in this case, except that the cell counts were higher. Hence it would seem that the presence of a mild increase in the cell count with diminution in the sugar content is characteristic of cerebral, particularly meningeal, fungous infections as distinguished from meningitides of bacterial origin, in which the cell count is usually much higher and polymorphonuclear leukocytes predominate in the acute stage.

As molds of various sorts are often the bane of the clinical pathologist, the first thought—we might even say accusation—was that our culture mediums had become contaminated. We feel that this source of error was definitely ruled out in our case by meticulously checking all mediums and steps in the clinical laboratory technic, but we wonder whether other cases may not have been missed by us and by other laboratory workers by discarding such cultures as contaminations.

SUMMARY AND CONCLUSION

The case of mycotic endocarditis in a drug addict with postmortem observations and mycologic study illustrates the necessity of taking into consideration the possibility of mycotic infections in those cases in which the clinical picture of subacute bacterial endocarditis cannot be confirmed by the demonstration of Streptococcus viridans in the blood stream or in an atypical neurologic condition resembling a vascular accident of obscure etiology. It should also be suspected in what may seem to be torulosis when difficulty is encountered in positively identifying the organism. In such cases, examination of the cerebrospinal fluid, with particular reference to the quantitative sugar content and the cell count, may lead to the correct diagnosis.

An unusual organism does not necessarily indicate poor laboratory technic.

5. Jacobson, H. P.: Fungus Diseases, A Clinico-Mycological Text, Springfield, Ill., and Baltimore, Charles C. Thomas, Publisher, 1932, pp. 253-369.

6. Anderson, G. C.: Fungus Infections of the Brain, Arch. Surg. **42**: 379-386 (Feb.) 1941. Levin, E. A.: Torula Infection of the Central Nervous System, Arch. Int. Med. **59**: 667-683 (April) 1937.

END RESULTS IN REMOVAL OF BLADDER NECK OBSTRUCTION

HERMAN L. KRETSCHMER, M.D.
CHICAGO

In a perusal of the voluminous literature on the subject of the treatment of bladder neck obstruction, whether by suprapubic or perineal prostatectomy or by transurethral resection, one finds that all phases of the subject have been considered, and some of them in great detail, with the possible exception of a discussion of the end results. A good deal of argumentation is to be found in the present day literature relative to the pros and cons; that is, the arguments for and against resection in the treatment of bladder neck obstruction. But an equal amount of emphasis has not been placed on the essential aspect of the treatment, which is the relief of the obstruction. Relief of the obstruction results in cure; therefore, relief of the obstruction is the objective that must be attained, because unless the obstruction is completely relieved, no matter which method of operation is employed, one fails to cure the patient. On the other hand, when the obstruction has been completely removed a cure automatically follows.

I know of no more critical way of evaluating the end result than to determine whether or not the patient still has residual urine. It is to be remembered that a small amount of residual urine may be present at the time the patient leaves the hospital. I am sure that every urologist has seen these small amounts disappear without further treatment. However, one should not blind oneself to the fact that the residual urine may not disappear, especially if it is more than a small amount, and that another resection is in order. With increasing experience, the need for a second resection becomes less and less frequent except in the very large prostates where obviously obstructing tissue cannot all be removed

at one sitting. I have seen 2 and 3 ounces of residual urine disappear. On the other hand, if it does not disappear, I think the patient should have a second resection, especially if symptoms persist and the urine remains turbid. In my experience, when the obstruction has been completely removed, the symptoms for which the resection was done disappear and the urine gradually becomes clear. Local treatment is rarely indicated. What should be remembered is that the prostatic bed after resection does not heal readily and that in some cases the healing process is prolonged. I have examined a few patients some twelve weeks after resection and have found that healing was not complete.

In an occasional case the symptoms may persist because of an associated prostatitis; that is, infection in the prostatic bed. More frequently, however, they are due to a preceding infection in the seminal vesicles. These conditions call for the usual form of treatment.

This paper is based on a study of examinations made in an unselected series of 144 cases in order to determine whether residual urine was present. In the accompanying table the results obtained are presented. The results obtained in studies already published [1] are also included. A review of the charts shows several interesting facts:

Residual Urine in 144 Cases

Amount of Residual Urine	1st Series, per Cent	2d Series, per Cent	Present Series, per Cent
None	66.30	75.82	78.472
11-20 cc.	16.11	12.08	13.888
Total	82.41	87.90	92.360
21-30 cc.	6.22	6.95	2.777
31-40 cc.	1.83	0.53	0.694
41-50 cc.	2.19	0.73	0.694
Over 50 cc.	7.32	3.76	3.471
Total	99.97	99.87	99.996

1. A gradual definite increase in the number of patients who had no residual urine; that is, from 66.3 per cent in the first series up to 78.47 per cent in the third series of cases studied.

2. A reduction in the percentages of those having 11 to 20 cc. of residual urine from 16.11 per cent in the first series to 13.88 per cent in the third series.

3. A definite increase in the sum total of these two groups, namely 82.41 per cent in the first series, 87.90 per cent in the second series and 92.36 per cent in the third series.

4. A pronounced reduction in the patients who had from 21 to 30 cc., namely 6.22 per cent in the first series, 6.95 per cent in the second series and 2.77 per cent in the third series.

5. A decided reduction in the patients who had from 31 to 40 cc., namely from 1.83 per cent in the first series to 0.694 per cent in this series.

6. A reduction in the patients who had 41 to 50 cc., namely from 2.19 per cent to 0.694 per cent.

7. A definite reduction in the patients with more than 50 cc., from 7.32 per cent in the first series to 3.47 per cent in the present series.

122 South Michigan Avenue.

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Clinical Notes, Suggestions and New Instruments

TRAUMATIC RUPTURE OF THE THORACIC DUCT WITH CHYLOTHORAX

A BRIEF REVIEW OF THE LITERATURE

JOSEPH F. DORSEY, M.D., AND GEORGE E. MORRIS, M.D.
BOSTON

Traumatic rupture of the thoracic duct with chylous effusion into the pleural cavity is a condition so rare that the reporting of an additional case seems warranted.

The first authentic case of traumatic chylothorax was reported in 1875 by Quincke.[1] In 1933 Mouchet [2] collected 43 published reports of authentic cases and in 1937 Bauersfeld [3] collected 5. Since his article was published 11 additional cases have been reported, 2 by Shackelford and Fisher,[4] 1 each by Strauss,[5] Beatty,[6] Brown,[7] Szajna,[8] Fujita,[9] Everhart and Jacobs,[10] Cellan-Jones and Murphy,[11] Matson and Stacy [12] and Hoyer,[13] totaling 59 reported cases.

The thoracic duct originates anterior to the body of the second lumbar vertebra as the cisterna chyli. It ascends through the posterior mediastinum between the aorta and the azygos vein, emptying into the left subclavian vein at its junction with the internal jugular vein. The duct conveys the products of fat digestion in the form of lymph laden with fat, or chyle, from its site of formation, the intestine, to the blood stream at the rate of 130 to 195 cc. an hour.

Chylothorax is the result of a break in the continuity of the thoracic duct due to direct or indirect trauma or from processes which obstruct or partly destroy the duct. Trauma that is insufficient to cause fractures may result in an increased intraductal pressure causing the duct to burst. The average length of time that elapses between the accident, the latent period and the onset of symptoms is four days. However, in this case, twenty-seven days intervened between the date of injury and the second admission to the hospital.

The symptoms of chylothorax are progressive dyspnea, cyanosis, shock and signs of pleural effusion. The most important clinical features are the latent period, the repeated reaccumulation of fluid within the chest after aspiration and a gradual progressive emaciation which frequently ends in death.

Chylous fluid is a milky, noncoaguable, opalescent fluid containing fat. It is alkaline in reaction and has a specific gravity of 1.012 or higher.

In cases of traumatic chylothorax, surgical intervention with ligation of the duct below the tear or an attempt to repair the rent has resulted in a mortality rate of 100 per cent. Con-

From the First Medical Service, Boston City Hospital, and the Department of Medicine, Tufts College Medical School.

1. Quincke, Heinrich: Ueber fetthaltege Transsudate Hydrops chylosus und Hydrops adiposus, Deutsches Arch. f. klin. Med. **16:** 121-139 (June) 1875.
2. Mouchet, Alain: Le chylothorax traumatique, J. de chir. **42:** 386-399 (Sept.) 1933.
3. Bauersfeld, E. H.: Traumatic Chylothorax from Ruptured Thoracic Duct, J. A. M. A. **109:** 16-18 (July 3) 1937.
4. Shackelford, R. T., and Fisher, A. M.: Traumatic Chylothorax, South. M. J. **31:** 766-775 (July) 1938.
5. Strauss, Abraham: Chylothorax Due to Bullet Wound of Thoracic Duct and Syndrome of Traumatic Chylothorax, J. Thoracic Surg. **5:** 539-551 (June) 1936.
6. Beatty, O. A.: Chylothorax: Case Report, J. Thoracic Surg. **6:** 221-225 (Dec.) 1936.
7. Brown, A. L.: Traumatic Rupture of the Thoracic Duct with Bilateral Chylothorax and Chylous Ascites: A New Operation; Report of a Case, Arch. Surg. **34:** 120-128 (Jan.) 1937.
8. Szajna, M.: Ein Fall von Chylusflüssigkeit in der Pleurahöhle, Wien. klin. Wchnschr. **50:** 1460 (Oct. 22) 1937.
9. Fujita, K.; Bando, T., and Sugishita, J.: Ein Fall von Chylothoracis traumaticus, Arch. F. jap. Chir. **16:** 229 (March 1) 1939.
10. Everhart, J. K., and Jacobs, A. H.: Chylothorax: Review of the Literature and Report of a Case in a Newborn Infant, J. Pediat. **15:** 558-562 (Oct.) 1939.
11. Cellan-Jones, C. J., and Murphy, William: Traumatic Chylothorax, Brit. M. J. **2:** 590 (Nov. 2) 1940.
12. Matson, R. C., and Stacy, J. W.: Traumatic Chylothorax, Dis. of Chest. **6:** 332-336 (Nov.) 1940.
13. Hoyer, A.: Chylothorax, Nord. Med. tidskr. **9:** 40 (Jan. 4) 1941.

servative treatment by aspiration of the chylous fluid carries a fatality rate of 50 per cent.

Oeken [14] and Bauersfeld [3] advocate the intravenous injection of the aspirated chyle. Our patient was treated by this method.

REPORT OF CASE

History.—F. McL., a white man aged 60, unmarried, was admitted to the First Medical Service of the Boston City Hospital Nov. 12, 1937. He was in an alcoholic stupor and unable to give a reliable history.

On Oct. 16, 1937, the patient had been admitted to a surgical service of this hospital. At that time he was also in an alcoholic stupor with contusions of the back and a lacerated scalp. Roentgenograms of the chest showed an incomplete fracture of the left tenth rib. The patient stated that he had fallen down a flight of stairs immediately prior to his admission to the hospital. He remained in the hospital nine days during the first six of which he had an intermittent temperature to 101.2 F. Thereafter his course was uneventful and he was discharged with a diagnosis of incomplete fracture of the left tenth rib and acute alcoholism.

Physical Examination.—The patient was well developed and well nourished and in no apparent distress. There was an alcoholic odor to his breath.

The temperature was 97.8 F., the pulse rate 100 and the respiratory rate 20.

The head and neck were normal.

The lower half of the right side of the chest, anteriorly and posteriorly, showed absent tactile fremitus, flatness and decreased breath and voice sounds. Breath sounds were increased in the left midchest anteriorly. No rales or friction rubs were heard.

The heart was not enlarged; the sounds were of fair quality. There were no murmurs or thrills. The rhythm was regular, A_2 being greater than P_2. There was no peripheral sclerosis. The blood pressure was 140 systolic and 90 diastolic.

The abdomen, skeleton, reflexes and extremities were all normal.

The admission laboratory report showed that the urinalyses were negative, the hemoglobin 78 per cent Sahli and the white blood count 10,850. The Hinton reaction was negative and the nonprotein nitrogen 34.

A roentgenogram of the chest taken twelve hours after admission showed fluid in the lower half of the right side of the chest. The same day, because of pain in the chest and dyspnea, a thoracentesis was done. Thirty-one hundred cc. of milky fluid was removed. The fluid on standing separated into an upper creamy layer and a lower thinner portion. Four days later it was again necessary to remove the fluid, which had reaccumulated in the right side of the chest. As the needle entered the pleural cavity the fluid spurted forth, gushing with each inspiration. On this occasion 3,500 cc. was withdrawn. A roentgenogram taken immediately after the removal of fluid showed only a fracture of the left tenth rib.

During the patient's stay in the hospital 18,400 cc. of the fluid was removed, the indications for thoracentesis being pain in the chest, dyspnea or cyanosis. Immediate relief from these symptoms followed each withdrawal of fluid.

There was a constant loss of the products of metabolism as well as fluid in the removed chyle. A total protein of 5 mg. per hundred cubic centimeters, albumin 2.4 and globulin 2.6 (ratio of 0.92), and cholesterol of 125 on November 17 fell to a total protein of 2.7 and cholesterol of 103 on November 26. The fluid removed was milky, did not coagulate, was alkaline in reaction with a specific gravity of 1.016, total protein 3.1, albumin 2.4, globulin 0.7 and fat 1.8.

The patient was placed on a low fat, high carbohydrate, high protein diet but despite this lost weight rapidly. In an endeavor to decrease the flow of chyle through the duct a pneumothorax was done. Fluids were limited by mouth but were given by hyperdermoclysis or intravenously. On November 22 he was given 1,000 cc. of chyle intravenously; he also received 1,500 cc. on November 26 and 1,000 cc. on November 27. Despite treatment, he became extremely weak and emaciated and died suddenly November 29, his eighteenth day in the hospital.

14. Oeken: Ein Fall von Zerrissung des Ductus thoracicus infalge Brustquetschung, München. med. Wchnschr. **55**: 1182-1183 (June) 1908.

AUTOPSY REPORT

The autopsy report was made by Dr. Paul Creehan and revealed the following points of interest:

Surfaces of the peritoneal cavity were smooth and glistening; there was no free fluid.

When the right pleural cavity was punctured with a needle, air escaped, the diaphragm receded and the liver assumed its normal position. In the right side of the chest there was 4,900 cc. of moderately thin, gray-yellow fluid. The right lung was completely collapsed. The left pleural cavity was not remarkable; there was no free fluid and the surfaces were smooth and glistening.

The pericardial cavity was not remarkable; the surfaces were smooth and glistening and there was about 35 cc. of clear serous, straw colored fluid present.

The right lung weighed 370 Gm. and the left 440 Gm. The right lung was a dull gray, collapsed and completely atelectatic.

The thoracic duct was carefully dissected in its entire length and freely exposed. India ink was injected slowly into the cisterna chyli, flowed up the duct and escaped into the pleural cavity through a small "puncture-like" opening in that portion of the duct lying over the upper portion of the twelfth thoracic vertebra. The ninth and tenth ribs on the left side showed evidence of recent fractures about 4 cm. from the head of the ribs. No fracture or evidence of fracture of the vertebrae was found.

Special Article

INDISPENSABLE USE OF NARCOTICS

[*Now that the sources of supply for narcotics have been largely shut off, their use in medical practice must be confined to the absolutely indispensable. In 1931* THE JOURNAL *published a series of articles entitled "The Indispensable Use of Narcotics"; these articles were collected and published in book form. This material is now republished—revised, rearranged and shortened—to guide physicians in the present attempt to confine the use of narcotic drugs to an irreducible minimum.*—ED.]

USES AND ABUSES OF NARCOTICS

Properly speaking, cocaine is not a narcotic. Although one of the most dangerous habit forming drugs and included under the Harrison Narcotic Act, it will not be considered here. Opium and its derivatives are the only narcotic drugs to be discussed. Opium itself is a complex substance containing some twenty alkaloids, only four of which, however, are of practical importance, namely morphine, codeine, narcotine and papaverine. Morphine has four actions on which its therapeutic uses depend: 1. In small amounts it is a depressant to the pain perceiving centers of the cerebrum. 2. In somewhat larger doses it depresses the intellectual functions and thereby exerts a somnifacient effect. 3. It is a depressant to the respiratory center, in small doses lessening its response to irritation and in large doses reducing the amount of air moved. 4. It tends to lessen glandular activity, probably affecting to a greater or less degree all the secretions of the body except the sweat. 5. The older writers also ascribed to it an important effect in diminishing the contractility of the unstriped involuntary muscles, especially those of the intestine, but recent investigation indicates that its action may be stimulating rather than depressing to peristalsis.

Narcotine, which is the next most abundant alkaloid after morphine, despite its name is not narcotic. It exerts neither analgesic nor sleep producing effects.

Its most important action is a stimulation of the medullary centers governing respiration. In this it is directly antagonistic to morphine.

Papaverine has a feeble narcotic action, its dominant effect being to lessen the irritability of unstriped muscle. Like narcotine, it is stimulant to the respiratory center. It has been recommended in various spasmodic conditions of the involuntary muscles, such as asthma or colic. It is a relatively feeble drug, requiring about a grain (0.065 Gm.) to produce sensible effect on a man and is present in opium in such small amount (about 0.5 to 1 per cent) that it can play only a minor part, if any, in the effect of opium.

Codeine is similar in its general actions to morphine, although much weaker. It has relatively slight action on pain perception or intellection and is much less liable to give rise to an addiction. Ordinarily opium yields from 1 to 2 per cent of codeine.

The therapeutic purposes for which opium is used may be considered under six heads: (1) locally, (2) as an analgesic, (3) as a somnifacient, (4) as a respiratory sedative, (5) as a sudorific, (6) for its effect on the intestine.

As an assuager of pain, morphine stands unrivaled at present by any other drug or combination of drugs. Nevertheless it is used more frequently and in larger quantities than is necessary and often to the detriment of the patient. By the use of other anodynes the physician can often contrive to get along with surprisingly small quantities of opiates. The decision as to whether or not to use morphine in any given case should be based on three factors: the severity of the pain, its probable duration and its underlying cause. One of the most difficult problems of therapeutics that the physician has to face is the alleviation of pain in certain chronic diseases, such as arthritis or neuritis, which may be so intense as to demand an opiate and yet promises to be of such long duration that it is likely to lose its anodyne power and to present great risks of causing addiction. Physicians may, by the exercise of more thought in practicing, do much to avoid censure in relation to narcotic addiction. In this endeavor the substitution, whenever possible, of nonhabit forming drugs for morphine or other opium alkaloids is of paramount importance. When narcotics are indispensable, however, no more should be administered than is necessary to achieve the desired end. Patients requiring daily administration should be seen often by the physician, and the amount of drugs ordered or supplied should not exceed that required by the patient until seen again. The independence of administration on the part of nurses should be strictly limited to prescription, and any change in treatment should be in writing. The patient should never be informed of the nature of the drug used or of the dose administered. The patient should never be permitted to administer the drug hypodermically to himself. Use of the drug should be discontinued immediately when no longer required. If craving has resulted, close supervision and appropriate treatment should be maintained until the patient has been rendered entirely independent of the drug.

USE UNDER THE HARRISON NARCOTIC ACT

The Harrison Narcotic Act covers only one class of narcotic drugs, opium and its derivatives and preparations. It covers also coca leaves and derivatives and preparations of them, which are not narcotics. Registration of every practitioner who uses narcotic drugs professionally is mandatory under this act. A practitioner can lawfully administer, dispense and prescribe narcotic drugs to only such patients as are under his professional care. The act does not limit specifically the quantity that may be used or the time during which their use may be continued and requires only that the dosage be consonant with proper professional practice. It places no restriction on the form in which narcotic drugs may be administered. The administration, dispensing and prescribing of narcotic drugs for the sole purpose of satisfying the cravings of an addict are not within the bounds of professional practice. It is not, however, unlawful under the act to attempt to cure narcotic addicts of their addiction even though narcotic drugs are used in the attempt. If they are so used, the dosage from day to day should be accurately recorded. A practitioner should not administer, dispense or prescribe narcotic drugs for a stranger unless it is an obvious necessity, as in the case of a severe accident.

A practitioner can lawfully administer narcotic drugs personally to his patients hypodermically, by mouth or otherwise in any form or amount with such frequency and for such period of time as may be justified by good professional practice. A practitioner is not required by law to keep a record of the narcotic drugs he administers or dispenses to a patient on whom he personally attends, although such record can do no harm if administration of such drugs is lawful, whereas its absence may prove embarrassing. The practitioner may lawfully dispense narcotic drugs personally to his patients, but a too extensive resort to dispensing may justify a suspicion that the dispenser is only catering to narcotic addicts. Under no circumstances should a greater quantity of narcotic drugs be dispensed than the minimum required by existing conditions. The quantity should not exceed the quantity necessary to provide for the patient until he is to be seen again by the practitioner. If any greater quantity is called for, it should be provided through a prescription so that the entire transaction may be a matter of record.

A prescription for narcotic drugs need not show the ailment or injury for which it is given. Every prescription, however, must contain the patient's full name and address and the prescriber's signature, address and registration number. It must be written in ink, with an indelible pencil or on a typewriter, and must bear the full signature of the prescriber. It must be dated and signed on the day on which it is written. The act does not require a practitioner to keep a record of his prescriptions for narcotic drugs. A prescription for a narcotic drug cannot lawfully be refilled unless it is for one of the so-called exempt preparations or calls for a mixture in which the narcotic content does not exceed the narcotic content allowed by law in such preparations. The person who violates any provision of the Harrison Narcotic Act is liable to fine of not more than $2,000 or imprisonment for not more than five years, or both. Failure to pay the required tax (registration fee) within the time limit prescribed by the act adds a penalty of 25 per cent to the tax when it is paid. Under the laws of some states, conviction of violation of the Harrison Narcotic Act is a ground for suspension or revocation of a license to practice medicine.

NARCOTICS IN THE PRACTICE OF MEDICINE

That opium or its derivatives are indicated in certain diseases and contraindicated in others, nearly all will admit; but, as to specific use, there are many physicians whose opinions differ, and the question remains in doubt.

All will agree as to the indispensability of morphine in the hopeless cases of carcinoma, regardless of the primary site. In cases of inoperable or extensive carcinoma of the uterus, prostate, bowel, tongue, stomach or breast, with or without generalized metastases, morphine is without peer and its judicious use in relieving pain constitutes one of the greatest services the physician can render. Not only is the patient relieved of pain but the euphoria that results is a blessing, and death, which otherwise might be almost intolerable, may be made easy and comfortable.

In another group of diseases, accompanied by pain and designated by colic, morphine is the drug of choice. In this group may be included the cases with biliary, renal or lead colic. Some one of the general anesthetics, as chloroform or ether, may give the desired relief but not without the necessity of maintaining a more or less complete anesthesia to obtain muscular relaxation, with the probability of a return of the pain as soon as the anesthesia is discontinued. Accompanying renal, hepatic, pulmonary or cardiac pathologic conditions may constitute a contraindication to the use of either of the mentioned anesthetics. Except in a few cases the use of morphine is considered only a palliative measure, as renal and biliary colic are essentially surgical, while the relief in lead colic will be required only for a comparatively short time.

The further discussion of the subject may best be accomplished by considering the various diseases according to the anatomic systems. Certain cardiovascular diseases, particularly those accompanied by pain, should be mentioned. Acute pericarditis, if the pain is severe, may fail to respond to any therapeutic effort short of the administration of morphine hypodermically, to be repeated as required. Perhaps the rheumatic type, in the acute plastic stage, is the form most frequently accompanied by severe pain, although any type may belong in the group.

Difference of opinion may exist as to the necessity of employing morphine in the arteriospasmodic type of angina pectoris. While it is true that most of the cases will respond to some of the vasomotor drugs, there are instances requiring one or more doses of morphine. In the coronary occlusion type of angina, whether embolic, obliterative or thrombotic, morphine becomes imperative. In this type the anginoid attacks are prone to be severe and protracted, without much, if any, expectation of relief from the vasomotor dilators.

In the pleuropulmonary group, some of the diseases and symptoms will require consideration. Although acute plastic pleurisy, either primary or secondary to pulmonary disease, with its excruciating pain and dyspnea, responds to some extent to immobilization by adhesive straps and physical therapy, too often the desired relief is obtained only by single or repeated doses of morphine.

Acute spontaneous pneumothorax, accompanied by pain and dyspnea, requires temporary relief by morphine until other therapeutic measures can be employed.

In pulmonary diseases, certain symptoms may predominate and endanger life. Pulmonary hemorrhage from any cause, particularly the massive form, accompanied by fear and anxiety, may be much relieved or benefited by a preliminary or repeated injection of morphine, this to be followed by the usual recognized therapeutic efforts, depending on the underlying pathologic condition. The dyspnea of far advanced pulmonary tuberculosis may well be classed with the hopeless cases of carcinoma, in which some relief and comfort may be had during the final days or hours. Much relief and comfort may be had in the dyspnea of primary or secondary cancer of the lung. The same is true in some cases of aneurysm compressing the trachea or a bronchus.

In the gastrointestinal group, gastric and rectal carcinoma of the inoperable and hopeless type have already been considered. The pain in gastric and duodenal ulcers, when present, will usually respond to ulcer management and does not require special analgesics. In the event of perforation, the treatment is surgical, but as a palliative measure a single or repeated hypodermic of morphine may be advantageous.

The bowel diseases, as acute enterocolitis, spastic and ulcerative colitis, diverticulitis, appendicitis and the various forms of dysentery, require their own individual form of therapy and rarely constitute a cause for special analgesics or opiates. Usually the cramps, pains and irregular bowel action in spastic colitis, on a bowel management with tincture of belladonna, will be relieved, but occasionally the cramps or a profuse diarrhea can be controlled only by doses of an opiate, preferably camphorated tincture of opium. If the diarrhea is the predominating complaint, powdered opium may give the best results, as the powder is more slowly absorbed in the intestinal tract. With the increased knowledge of the different types of dysentery there has necessarily been an improvement in the therapy. Many of the older drugs have been discarded. As in spastic colitis, when diarrhea is particularly pronounced and uncontrollable by other means, powdered opium may be of service. Rectal tenesmus, regardless of the cause, can be best controlled or relieved by rectal suppositories containing powdered opium or morphine.

Of the remaining mentioned diseases, appendicitis is surgical and often ulcerative colitis and diverticulitis also are best treated surgically. Rarely, if ever, is an opiate required or justified.

Some mention should be made of typhoid and the former practice of prescribing morphine or opium in the treatment of complicating bowel hemorrhages. As the bleeding is usually due to the ulceration of the bowel, there is always the question of accompanying or developing perforation. When morphine or opium is prescribed, the symptoms and signs may be so modified as to make the differential determination more difficult or even impossible.

While the cerebrospinal group includes a considerable number of diseases, only a small minority of them can justly claim the indispensable therapeutic use of opium or its derivatives. It is in the symptomatic treatment of the various psychoses, and in neuroses, psychoneuroses, hysteria and insomnia, that the newer hypnotics are of such indispensable service. Even in the acute manias and in delirium tremens it is only after the bromides and chloral hydrate, paraldehyde and the newer hypnotics have failed that an opiate is permissible. It should be emphasized again that the employment of opium or its derivatives for their hypnotic effect alone is open to question.

As to the spinal diseases, special mention should be made of tabes dorsalis with tabetic crises and lightning pains. The use of morphine to relieve these conditions should be the last resort, as dependence and morphinism are easily produced.

Peripheral neuritis, local or multiple, is usually secondary to some primary pathologic condition. The

neuritis may be of the alcoholic or arsenical type, perhaps due to a focal infection or a compression, as in spinal caries or a cervical rib. In each individual case the therapeutic efforts should be concentrated in an effort to relieve the primary cause.

The opium or codeine treatment of diabetes mellitus has no longer been in vogue since the advent of insulin, but not infrequently there is an associated diabetic neuritis. When the pains are severe and do not subside on diabetic therapy, occasional doses preferably of codeine or even of morphine may be required.

Some narcotic preparations have been extensively employed in the treatment of coughing. Narcotics, however, are often misused in the treatment of coughing by those who fail to bear in mind the variety of causes producing coughing, diagnostic uses of coughing, the services it performs and its disadvantages and dangers. The underlying basis of the cough must be borne in mind in all rational treatment. The productive cough should not be interfered with, unless it does more harm than good. Morphine should not be used for a cough when simple means suffice, and there are available a great many other means of controlling most types of cough. The cough reflex is depressed by relatively small doses of morphine. The exact dose necessary for the relief of coughing cannot be stated because irritation of the respiratory tract gives rise to strong stimuli, and the stronger the stimuli the greater is the depression of the center necessary to abolish the reflex that such stimuli would induce. The dose necessary, therefore, varies widely and in some cases may be as little as $\frac{1}{30}$ grain (2 mg.). One should never direct that the single dose of morphine for a cough be repeated at stated intervals without regard for the varying needs of the patient from hour to hour and from day to day. The dose should always be reduced to the least amount as alleviation of the symptoms permits.

Morphine often causes dryness of the mouth and throat. It has been suggested that the apparent diminished secretion of mucus in bronchitis may be due to greater absorption of water, but it seems probable that the action is central. This may be partially overcome by the simultaneous use of nauseants when they are not otherwise contraindicated, and the simultaneous use of morphine and apomorphine has been suggested. The popular Brown Mixture contains $\frac{1}{300}$ grain (0.2 mg.) of morphine in the form of camphorated tincture of opium, and $\frac{1}{65}$ grain (1 mg.) of antimony and potassium tartrate in the average dose of 4 cc. (1 fluidrachm). Morphine is said to have the advantage over codeine of causing some relaxation of the bronchial muscles, which is useful when the passages are greatly obstructed by an accumulation of mucus. This advantage, however, is usually slight compared to the many advantages of codeine.

The actions of codeine resemble those of morphine in general, but they differ in certain essentials. Codeine is less actively depressant to the higher parts of the brain and to the respiratory center, and it is more actively stimulating to the cord and, with large doses, even to the respiratory center. This probably partially explains why codeine sometimes proves unsatisfactory in the treatment of coughs, and it suggests that failure can often be avoided by a careful regulation of the dose, especially if it is used in connection with other measures for lessening a cough. It is almost universally admitted that codeine relieves a cough nearly as well as morphine.

USE OF NARCOTICS IN SURGERY

The use of habit forming drugs in surgery may be divided into three parts: (1) the preoperative and diagnostic period, (2) the operation with its preparatory and recovery phases and (3) the care of patients with inoperable disorders, including those cases of cancer in which surgery is inadvisable. The preoperative period should properly be spoken of as the "study period." It is the time when a proper diagnosis should be made, and, although it may necessitate innumerable tests, the principal requirement is that the patient during this period be kept as uninfluenced by drugs as possible. Pain is one of the chief diagnostic signs, and, if the diagnostician is robbed of its significance through the careless and often too free use of morphine and its derivatives, its aid is removed. Those who have seen patients with abdominal or intracranial disease rendered so comfortable and even drowsy that all complaints have disappeared know the danger of the premature use of drugs. Furthermore, in the presence of head injuries administration of narcotics may be actually dangerous. However, if the investigative period is indicated for the clarification of the diagnosis, it should be carried out as expeditiously as possible, for to subject a patient to continuous pain over any great period of time is a decided reflection on one's diagnostic acumen. In the excruciating pain of smooth muscle colic, as seen in patients with renal and biliary calculus, the use of morphine would seem to find full justification. In this group of disorders, however, the administration of atropine and the application of heat may prove efficacious, and this therapy deserves wider usage.

It is in the field of traumatic surgery that morphine again assumes an important role, and because of its ready availability, ease of administration and relatively certain and rapid action it is almost indispensable. Here the likelihood of the manifestation of its one objectionable feature is reduced to a minimum. Military surgery would be almost impossible without morphine. In cases of severe trauma this drug not only brings the necessary relief from suffering but, if shock intervenes, constitutes one of the chief therapeutic weapons. In such conditions morphine should be given promptly in sufficient dosage to avoid frequent repetition.

Morphine, either alone or combined with other synergistic drugs, continues to be the most universally satisfactory type of preoperative medication. For this purpose in recent years some of the newer barbiturate derivatives have proved satisfactory substitutes, and their use, even when not substituted for morphine preoperatively, can result in a material saving in the quantities of opiates employed.

After an operative ordeal it is of paramount importance to reduce the discomfort of a patient to a minimum; morphine should not be spared to accomplish this end, but it should not be employed indiscriminately. Frequently the patient's discomfort may be due to quite tangible conditions, such as position, an unnecessarily tight dressing or urinary or intestinal distention; these can be dealt with specifically rather than symptomatically by the injection of morphine, although to follow the former course necessarily involves slightly more effort on the part of those in attendance. In the first twenty-four to seventy-two hours following many major procedures the patient should receive sufficient morphine to keep him comfortable, provided an honest effort has been made to ascertain that his discomfort cannot be corrected by some simple remedial measure. Here

again, no doubt, in certain instances, other sedatives may be substituted for morphine, but in general such substitutions, with the possible exception of codeine, prove unsatisfactory. A further contraindication to large quantities of morphine after operation is that this drug may add a degree of atony to the intestine which proves undesirable, particularly if there was a preexisting tendency in this direction.

One should also mention the other drugs—heroin, codeine and ethylmorphine hydrochloride—which have their devotees. Ethylmorphine hydrochloride may have its uses in ophthalmology. There are instances when codeine can be substituted for morphine quite effectively, and one should always consider this possibility, particularly in view of the almost complete absence in this drug of any tendency to the production of addiction. When administered by mouth, it may be combined advantageously with some of the coal tar derivatives.

NARCOTICS IN OBSTETRICS AND GYNECOLOGY

Sedatives are used during pregnancy, labor and the puerperium. During pregnancy the most common indication for narcotic medicines is the prevention of abortion. Rest in bed, combined with morphine or other preparations of opium, has saved numerous pregnancies from disaster. A combination of chloral with bromides has been used, but it is not nearly as effective. When an acute abdominal condition develops during gestation or an operation is performed at this time, narcotics are particularly indispensable, to allay uterine action which might expel the ovum.

Certain cases of chorea gravidarum do not respond to the usual remedies, and a combination of morphine and scopolamine may have to be exhibited for temporary sedation. The same may be said of psychoses.

Pregnancy does not contraindicate the exhibition of narcotics for any purpose that demands them. Although the effect of morphine on the unborn child has been a controversial question, the consensus appears to be that the child does not suffer except from an overdosage that would endanger the mother. However, cases are on record in which, it is said, the excessive unwarranted use of morphine during pregnancy has shown effects on the child. Chloral and chloroform pass over to the fetus, but any possible deleterious action has been considered as of secondary importance during pregnancy. The barbituric acid preparations also have widespread application in pregnancy.

During labor, opium preparations are invaluable. However, the routine administration of narcotics in labor, as demanded by hysterical magazine writers and as practiced by many overenthusiastic accoucheurs, has resulted in and is yet causing numerous deaths of newborn children and also a certain number of maternal deaths. On the other hand there is a real and scientifically proved ground for the scientific administration of narcotics during labor. The process of human childbirth is commonly pronounced to be a natural, harmless function; but accoucheurs know that, while this may have been the original intention of nature, the modern woman can seldom be brought through the ordeal without some physical damage to her body, that often she cannot be got through alive, and that frequently the shock to her nervous system leaves permanent injury.

Labor is often protracted, especially in primiparas, and exhaustion of the mother may delay the process so long that infection may creep in. Here a hot pack and a rectal infusion of chloral, with a hypodermic of some opium preparation, will rest the uterus as well as the nervous system and preserve the heart and the life forces of the patient. When she awakes, the activity of the uterus is resumed with new energy and a stubborn cervix ("rigid os") often becomes supple and dilatable in the meantime.

Only in the rarest cases is the pain of the second stage bearable by a courageous woman. It is not possible to abolish all pain, but one can and should mitigate it.

Narcotics are said to lengthen the first stage of labor and to affect the child adversely if given in the second stage. Both statements are true, but only when the drugs are improperly administered. Given at the right time and in proper dosage, the child is not endangered and the mother is made more resistant to exhaustion, acidosis, shock and postpartum hemorrhage. By preserving her strength in a prolonged first stage, narcotics actually shorten the second and forfend difficulties in the third. Even the puerperium is more smooth and convalescence more rapid, and infection is less likely.

There are few occasions for the use of narcotics in the lying-in period. After-pains are almost never so severe as to require them, the barbituric acid preparations sufficing to procure sufficient relief. A combination of codeine and acetylsalicylic acid is rarely found necessary. Naturally, any complication of the puerperium that would require narcotics for its own sake must be so treated at this time. Ordinary cases of wakefulness are well handled with a barbiturate. In the sleeplessness that is an obstinate condition in cases of puerperal infection there is no drug as efficacious as morphine, and in the diarrheas of sepsis it must also be used. To rest the bowels in cases of peritonitis it affords the patient much relief.

In general, what is said of the use of morphine and its derivatives in surgery applies equally well to the practice of gynecology. For the postoperative pain and abdominal symptoms morphine is indispensable, and the narcotic often saves life by its sedative influence on the bowel. For the treatment of chronic gynecologic diseases morphine has only limited uses and should be dispensed with as much as possible with the exception of incurable cancer.

NARCOTICS IN LOCAL ANESTHESIA

The ideal method of performing operations on a conscious patient without mental or physical discomfort requires a balanced use of sedatives, analgesics and anesthesia. Premedication to local anesthesia aims to diminish psychic reactions and painful sensations. In minor ambulatory procedures it is not necessary; before major surgical operations the restless night, fear and anxiety not only exhaust the patient but may cause definite bodily changes. Ordinarily sedatives of the barbituric acid series are sufficient for this purpose. The most frequent causes of toxic symptoms after local anesthesia are excessive premedication, error in the concentration of the solution of local anesthetic used, inadvertent intravenous or intraspinal injection and an individual hypersensitivity to cocaine, procaine hydrochloride or other local anesthesia.

ABUSES OF NARCOTICS AND ADDICTION

The problem of narcotic addiction merits the attention of physicians for many reasons and at this time in particular results in an enormous diversion of narcotic drugs from their field of proper employment.

Narcotics may be defined as agents that lessen the relation of the central nervous system to external as well as internal conditions of the body. They act by

freeing the mind more or less from the thraldom of the senses, and therein lies their value as well as their danger. It is the "ease and ignorance" with which one may be relieved of a great multiplicity of symptoms by means of narcotics that makes their use an ever present temptation to patient and physician alike; and it is only by patients foreswearing self medication and by physicians adopting certain definite rules regarding their employment that the abuse of narcotics can be guarded against.

Thus, narcotics should never be employed to remove a diagnostically indispensable symptom. As an illustration, the old and well worn warning against the use of opium in appendicitis at once comes to the mind. In a case of appendical colic, for instance, in which operation may or may not be required, the administration of an opiate may, by the comfort it gives, create the impression that the patient is getting well and obscure the fact that inflammation is setting in and perforation is threatening or has occurred, and immediate operation is required to save life. One may relieve the pain of a strangulated hernia or an intussusception by an opiate and even check the vomiting, so that it may seem that all is well when, as a matter of fact, the patient's death is commencing with necrosis of the bowel.

Nothing is easier than to remove the results of fatigue—headache, backache, nervous irritability, insomnia—by narcotics; nothing is worse, unless the fatigue is due merely to temporary overexertion. When the excessive strain is habitual and the demand for the relief of its ill effects also becomes habitual and is gratified, one is driving head on to a serious wreck. A rest treatment is needed, not dope. It is unfortunate that the term "rest cure" has become so intimately associated with the famous Weir Mitchell prescription. It should be recognized that there may be all sorts and degrees of rest treatment. For instance, a regular after dinner nap is one of these; and it will often do the distracted and harassed housewife or business man more good than any amount of medicine.

Formation of habit should be the ever present specter to inspire fear of prescribing narcotics in chronic or recurring ailments, unless there are malignant conditions or limited tenure of life to make the habit relatively unobjectionable. Especially should physicians, dentists, nurses and pharmacists make it their inviolable rule never to prescribe narcotics for themselves: for from among these classes is recruited a large contingent of those who become afflicted with the habitual use of narcotics. Some narcotics, as opiates and alcohol, are intrinsically habit producing. They operate in creating the notorious craving, partly by being most efficient antagonists to the disagreeable after-effects produced by the agent itself, and partly by causing mental deterioration. But all narcotics are liable to be habit forming, by reason of their very efficiency in relieving symptoms and their inability really to cure any disease. Therefore, as soon as the effect of the agent wears off, the original condition asserts itself, demanding relief. Whenever, therefore, a narcotic is employed it should merely be as an adjunct to the real curative treatment. It is only when cure is impossible that the narcotic habit may be a lesser evil than unrelieved suffering. In any case, an extensive range of knowledge of the many available narcotics should permit a choice of the least objectionable and yet most efficient agent for the particular patient to be relieved; and opiates should be appealed to only as a means of last resort.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

STITT COLD ULTRAVIOLET LAMP, MODEL S, ACCEPTABLE

Manufacturer: Charles Stitt, 1944 Beachwood Drive, Hollywood, Calif.

The Stitt Cold Ultraviolet Lamp, Model S, is a portable unit of the general class of "cold" or low pressure ultraviolet generators, using a gas discharge at high voltage in a fused quartz tube containing low pressure mercury vapor and argon gas. Two generators are provided, one a general body applicator consisting of 6 mm. quartz tubing in the form of an Archimedes spiral 50 cm. long mounted in a metal reflector 8 cm. in diameter, and the other an orificial applicator of twin bore quartz tube. The complete assembly, which includes the applicators, a 6 volt dry cell by which they may be operated when 110 volt alternating current is not available, cables, two pairs of goggles and a dispenser containing 3 yards of rayon sleeving, is mounted in a portable carrying case and weighs 25 pounds. Following are data supplied by the firm:

Stitt Cold Ultraviolet Lamp, Model S.

Therapeutically—The lamp produced the following intensity of ultraviolet light between 200 and 3200 angstroms, measured by the photometer at the specified distance:

Body lamp on AC at	4 inches	2,400 microwatts per sq. cm.
Body lamp on DC at	4 inches	1,000 microwatts per sq. cm.
Orificial on AC at	⅛ inch	3,600 microwatts per sq. cm.
Orificial on DC at	⅛ inch	1,800 microwatts per sq. cm.

The spectral distribution was measured by the ultraviolet photometer and found to be in percentage of the total energy in wavelengths less than 3,300 angstroms.

Between 2,000 and 2,600 angstroms	97%
Between 2,600 and 3,000 angstroms	7%
Between 3,000 and 3,200 angstroms	1%
Between 3,200 and 3,300 angstroms	1%

At 4 inch spacing on the body lamp, the calculated minimum perceptible erythema times from photometer measurements were fifteen seconds on alternating current and twenty-nine seconds on direct current.

The extrapolated photometer readings give the minimum perceptible erythema time for the orificial unit as ten seconds on alternating current and twenty seconds on direct current at ⅛ inch spacing.

Physiologic tests on untanned abdominal skin confirmed these observations within the limits of experimental observation. The results of such tests give the minimum perceptible erythema time as follows:

Body lamp AC at	4 inches	10 seconds	no erythema
Body lamp AC at	4 inches	20 seconds	definite erythema
Body lamp DC at	4 inches	20 seconds	no erythema
Body lamp DC at	4 inches	30 seconds	definite erythema
Orificial lamp AC at	⅛ inch	5 seconds	no erythema
Orificial lamp AC at	⅛ inch	10 seconds	definite erythema
Orificial lamp DC at	⅛ inch	10 seconds	no erythema
Orificial lamp DC at	⅛ inch	20 seconds	definite erythema

Mechanically.—The lamp appeared well designed, light in weight, and it should have good durability if handled with the care usually accorded ultraviolet lamps.

Electrically.—An electrical switch is provided, by which exposures may be timed up to four and one-half minutes. Power consumption on alternating current was fourteen watts for the body lamp and thirteen watts for the orificial unit. During a two hour heat test no part of the lamp or transformer became unduly heated.

The direct current power consumption was eleven watts with either burner.

The dry cells are said to last twenty hours when operated continuously.

The Council's investigation revealed the following:

I. *Orificial Applicator.*—Erythema tests showed that the ultraviolet output of the lamp is sufficiently intense to be acceptable. A spool of tubular artificial silk ribbon is supplied, which is slipped over the applicator to prevent burning of the orifice of a cavity that is to be irradiated. It is a simple matter to slip over the applicator a fresh piece of tubing for each patient.

II. *Cold Ultraviolet Hand Lamp.*—Radiometric measurements were made at a distance of 24 inches (61 cm.) from the front edge of the circular quartz tubing forming the burner of the hand lamp. The intensity was 36 microwatts per square centimeter, which complies with the minimum requirements for acceptability by the Council. The Council voted to accept the lamp for inclusion in its list of accepted devices.

Council on Foods and Nutrition

THE COUNCIL ON FOODS AND NUTRITION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

ANNUAL MEETING OF THE COUNCIL ON FOODS AND NUTRITION

The annual meeting of the Council on Foods and Nutrition held at the Association headquarters on March 6 was attended by the following members:

Dr. Franklin C. Bing
Dr. George R. Cowgill
Dr. C. A. Elvehjem
Dr. Morris Fishbein
Dr. Philip C. Jeans
Mr. Culver S. Ladd
Dr. Howard B. Lewis
Dr. James S. McLester
Dr. Irvine McQuarrie
Dr. Tom D. Spies
Dr. Russell M. Wilder

Drs. McLester and Lewis were reelected Chairman and Vice Chairman of the Council, respectively. Among the topics given consideration at the meeting, the following items may be of interest to physicians, manufacturers and others.

Scope of the Council.—In harmony with the instructions of the Board of Trustees, the Council has been devoting its facilities more and more to the study of broad nutritional problems and for this reason has been obliged to restrict its activities in connection with the approval of the labeling, advertising and composition of individual brands of many meritorious food products. During the last year a general plan has been formulated whereby the Council continues to give consideration primarily to special purpose foods, foods intended for the feeding of infants, and foods that have been nutritionally improved by the addition of vitamins, minerals and other dietary essentials.

Attention was given to the specific problems presented by enriched flour and enriched bread. The Council has been active in the development of these improved foods and believes that it would be to the interests of the health of the people if consumers would demand such products in place of ordinary white flour and white bread. During the last year, regulations regarding the composition and labeling of enriched flour have been developed. It is expected that the Food and Drug Administration soon will announce similar regulations regarding enriched bread. There are many hundreds of millers in the country and approximately thirty thousand bakers; the difficulty of reviewing the labels and advertising of all commercial products is at once apparent. The Council decided not to undertake consideration of individual brands of bread for acceptance or to continue to give consideration to individual brands of ordinary flour or enriched flour. It was decided instead to prepare suitable statements about the nutritive value of enriched bread and enriched flour and to try to develop a method whereby members of the food industry would be able to quote, if they so desired, the opinion of the Council on the nutritional properties of these products. A committee was appointed by the Chairman to formulate appropriate statements regarding the nutritional significance of enriched flour and enriched bread.

Problems Presented by General Advertising.—The Council is aware of the difficulties involved in the consideration of so-called educational advertising about foods. By insisting that advertising material is reasonably accurate prior to publication, the Council believes that it is accomplishing a public service that no other organization has been able to undertake. It was emphasized, however, that on such material it should be required at all times that an explanatory statement accompany the seal whenever displayed, this statement being to the effect that the nutritional claims in the particular advertisement have been reviewed by the Council and declared acceptable. It was also decided that the Council should sponsor more reports reviewing the scientific and medical literature on some of the foods which are extensively advertised, with a view to presenting a complete and balanced discussion of the nutritional merits and limitations of these foods.

Publications of the Council.—The book on the vitamins which was sponsored jointly by the Council on Foods and Nutrition and the Council on Pharmacy and Chemistry now is out of print. It was decided after thorough discussion that no new edition or new series of articles on vitamins should be contemplated at the present time. The Council now has under way a new series of articles on foods and nutrition which the Editor thought could be published in THE JOURNAL beginning in June or early summer. This series of articles will be collected in book form later as a Handbook of Nutrition.

The book Accepted Foods and Their Nutritional Significance, published at the very end of 1939, has been received with approbation. While it was decided that no new edition would be attempted at the present time, the Council is planning to issue a supplement to bring the description of accepted articles up to date.

Consideration was given also to other possible methods of bringing to the attention of physicians the newer knowledge of foods and nutrition, particularly with a view to keeping the profession informed of dietary problems under war conditions.

Exhibits of the Council.—The popularity of last year's exhibit on nutritionally improved flour and bread has encouraged the Council to develop another exhibit which will give consideration to nutritional deficiencies, to newer methods of diagnosis of these conditions and to the principles involved in the selection of an adequate diet. The Council voted to prepare an exhibit on these subjects in cooperation with the Food and Nutrition Board of the National Research Council. The Council's Committee on Exhibits consists of Drs. Spies, Wilder and McLester.

The Conservation of Vitamins, Especially Vitamin A.—It is well known that the supply of fish liver oils as sources of vitamin A must be conserved. The Council reviewed Limitation Order L-40 issued by the War Production Board. A significant part of the vitamin A supply is used in the fortification of foods, in particular oleomargarine. The Council voted to continue to give consideration to this problem with a view to assisting the governmental agencies to conserve the supply of vitamins for well established needs.

Mixed Vitamin Preparations.—The Council considered a report prepared by several members of the Cooperative Committee on Vitamins and concerned with the rational use of polyvitamin mixtures. It was decided that the report with some modifications should be sent to the Council on Pharmacy and Chemistry for further consideration.

Pantothenic Acid and Pyridoxine in Foods.—These two substances are included among the members of the vitamin B complex. Their significance in human nutrition still remains to be determined. Experimental work with animals indicates that these substances together with biotin and choline may be of great importance. Safety lies in the ingestion of a variety of natural foods, selected so as to meet the requirements of an adequate diet. There may be a real problem of providing some of the less well known vitamins in restricted dietaries. The Council concluded that it would be desirable to continue to give careful consideration to developments in this field, particularly because restricted diets that may be used over considerable periods of time may be deficient in one or more of the less well known ingredients of natural foods.

Vitamin D Milk.—The Council has been requested to express an opinion about the desirability of fortification of "penny milk" with 400 U. S. P. units of vitamin D to each bottle, which

contains 8 fluidounces of milk. This would mean that the child would receive in such milk a full daily allowance of vitamin D, but only a fraction of the daily requirements for calcium.

The milk would contain in each quart 1,600 U. S. P. units, and the Council has a policy of not accepting any vitamin D milk for which claims are made for more than 400 U. S. P. units of vitamin D to the quart.

The so-called penny milk program first was tried in the schools in Chicago in June 1940. The milk is sold to school children at a price of 1 cent for each half pint. It is served between meals. The sale of this low priced milk is made possible through a three way subsidy undertaken by the federal government, the milk dealers and the producers. In order that schools may be eligible to receive such milk, it is necessary that a considerable proportion of the school children come from homes where the income is comparatively low.

In considering the question it was mentioned that 8 fluidounces of milk is not an adequate intake of milk and that unless there is a sufficient intake of calcium, such as can be provided by more milk, the consumption of adequate amounts of vitamin D may be of little value. However, children consuming penny milk might and should receive additional milk at home, and the chances were that such milk would not be fortified with vitamin D. For this special type of product, therefore, the Council voted its approval of including as much as 400 U. S. P. units of vitamin D in 8 fluidounces.

The Council also reviewed a report on newer evidence regarding the vitamin D requirements of man. One firm has made a request that the Council accept milk that has been fortified with more than 400 U. S. P. units of vitamin D to the quart. While milk with 600 or even 800 units of vitamin D to the quart would not be detrimental, the Council still believes that 400 units of vitamin D to the quart represents reasonable fortification in the light of present knowledge. The newer evidence on the value of larger amounts of vitamin D in the prevention of dental caries is of great interest but it is not considered conclusive enough to warrant the Council changing its decision.

Breakfast Cereal Foods.—There are many prepared breakfast foods on the market. Few of these products have been standardized by regulations promulgated by official governmental agencies. The Council, therefore, believes it can render a service by giving particular attention to these items, especially with regard to the addition of vitamins and minerals to them. It was mentioned that breakfast cereal foods are consumed to but a slight extent, so that at most a product supplies not more than about 5 per cent of the total calories, whereas a staple food such as bread may supply 17 per cent or more of the total calories. Should a manufacturer desire to improve the nutritive value of his product, however, the Council believes that it is proper to do this within reason. The Council has accepted breakfast cereal foods that can be considered as general purpose foods when they have been fortified with moderate amounts of salts of calcium, iron and thiamine. A value now has been adopted for maximum restoration of breakfast cereal foods with riboflavin. An acceptable breakfast cereal food may contain in a quantity which will also supply 100 calories as much as 75 mg. of calcium, 1.5 mg. of iron, 0.25 mg. of thiamine and 0.1 mg. of riboflavin. Except for calcium these figures represent approximately the maximum amounts present in an ounce of either whole wheat, oats or corn.

Foods Fortified with Several Vitamins and for Which Broad Nutritional Claims are Made.—A number of products recently have been marketed which represent a mixture of vitamins or minerals or both with other substances of some food value. Representations made for these products usually are extremely broad. It was decided that these products, as well as others which are fortified to an extent beyond that which is acceptable for general purpose foods, will be considered by the Council as special purpose foods and their acceptability judged on that basis. This means briefly that in the labeling and in the advertising it will be necessary to state exactly the composition of the product and the special use for which the product is intended.

Commercially Canned Strained and Chopped Foods.—These products largely are intended for the feeding of infants, although to some extent they may be used for special diets for adults. The number of these products has multipled tremendously withia the last year or two. Many of the mixtures that have been compounded seem to have been formulated on principles that were not at all related to nutrition. Claims for mixtures containing as many as ten or more ingredients seem to be predicated on the false assumption that babies have peculiar tastes which need to be catered to. Color and taste in foods may be items of importance to the adult, but they have no special significance to the baby. A government order restricting the use of tin for cans permits the canning of strained and chopped foods intended for infant feeding provided the manufacturer packed that same food during 1941. This for the time being would tend to prevent the increase in the number of items that are formulated, although they still can be packed in glass.

The Council took no action on this matter but believes it is desirable to emphasize to manufacturers that multiplicity of items may limit the value of the products simply because there is greater chance that some ingredient is included that some persons cannot tolerate well. The basic principles that manufacturers should follow is, first, that the food produced be safe and, second, that it conserve the original nutritional value of the product to as high a degree as possible.

The question has been asked the Council whether fortification of canned strained or chopped foods intended for the feeding of infants would be acceptable. The Council is aware of no evidence at the present time that such a procedure would be desirable. The Council concluded that fortification of canned strained or chopped foods intended for the feeding of infants was not warranted in the light of present knowledge.

Other Topics.—There was discussion also of recent developments which indicate the desirability of including vitamins in solutions intended for parenteral feeding. Brief reports were made of studies now under way of the stability of iodine in iodized salt, a report on the nutritive value of butter, and of diets for therapeutic purposes. In the discussion of the latter topic it was emphasized once again that reducing without medical advice may be dangerous and cannot be sanctioned by the Council.

Mixed Juices.—Fruit and vegetable juices commercially produced have been on the market for a number of years and they have a well deserved place as sources of fluid, of sugar or other substances having food value, and especially of vitamin C. Recently there has been developed a number of mixtures which consist essentially of tomato juice diluted with the juice of other vegetables. In most instances these mixtures are decidedly inferior to ordinary tomato juice in vitamin C content and probably in carotene content as well. After full discussion of the problems involved, the Council adopted the decision that it could not approve of the production of mixed juices of inferior nutritional value.

Sugar, Candy and Carbonated Beverages.—There was considerable discussion of the nutritional problems presented by these products, which as a class comprise an appreciable proportion of the average caloric intake. It was decided that the views of the Council should be made the subject of a special report to be published later.

Saccharin as a Substitute for Sugar in Foods.—This question has come to the fore again because of restrictions on the use of sugar. Saccharin is not a food and it is excreted unchanged. Small doses appear to produce no ill effects, but larger doses such as 1.5 Gm. daily may cause gastrointestinal disturbances. It is hardly likely that this much saccharin ever would be consumed in one day, because on the basis of sweetness it would be equivalent to 1½ pounds of sugar. The Council reiterated its views that indiscriminate use of saccharin is not advisable and that its presence in any food product should be clearly indicated to consumers.

Sorbitol as a Substitute for Sugar in Foods.—This polyhydric alcohol, formerly a rare substance, is now commercially produced in considerable quantities. The compound appears to have no injurious effect on animals when given in small amounts. Evidence about its dietary value or lack of toxicity in human beings is somewhat uncertain. The Council adopted the decision that the evidence of the food value of sorbitol at present is inadequate to warrant its endorsement as a constituent of foods.

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SATURDAY, MAY 23, 1942

EFFECT OF SULFONAMIDE DRUGS ON NATURAL IMMUNITY

Although the therapeutic value of sulfonamide derivatives is now generally recognized, the effects of these drugs on the normal immunologic responses of patients is still being studied. Wood and Long,[1] for example, demonstrated specific mouse protective antibodies in the serums of 10 out of 12 pneumonia patients who had been treated with sulfapyridine; they concluded that the drug had not inhibited normal specific antibody formation in these patients. Similar results were reported by Edwards, Kircher and Thompson,[2] who studied dermal reactions to homologous capsular polysaccharides in patients with pneumonia who had been treated with this drug. In contrast with these favorable results, Kneeland and Mulliken[3] detected specific precipitins for homologous capsular polysaccharides in but 27 per cent of their patients treated with sulfapyridine and concluded that sulfapyridine seriously diminishes normal specific antibody formation. Similar unfavorable results were reported by Bukantz and de Gara,[4] who demonstrated homologous type specific precipitins in but 30 per cent of their convalescent pneumonia patients who had been treated with drugs of the sulfonamide type.

In order to harmonize this conflicting evidence, Curnen and MacLeod[5] of the Rockefeller Institute recently made careful parallel tests of the acquired immunity of "treated" and "untreated" rabbits inoculated with nonviable pneumococcus vaccines. Groups of 20 or more carefully selected rabbits were each given intravenously a single injection of 1 cc. of heat killed type I pneumococcus vaccine, corresponding to 10 cc. of an eight to ten hour broth culture of the micro-organism. Approximately half of the animals had received 0.5 Gm. of sulfapyridine by stomach tube at eight to twelve hour intervals for three days prior to the vaccination. The oral therapy was continued for twenty-four to forty-eight hours after the intravenous injection. Blood drawn at daily intervals showed adequate gastrointestinal absorption of the drug. The therapy was discontinued twenty-four to thirty-six hours before immunologic tests were made.

At intervals of forty-eight, seventy-two and ninety-six hours after vaccination, both "treated" and "untreated" rabbits, together with an equal number of normal nonvaccinated controls, were tested by an intradermal injection of 0.2 cc. of a 1:5,000 dilution of an eight to ten hour blood broth culture of highly virulent type I pneumococci. This injection was invariably fatal for the normal controls, causing a high sustained fever (104 F. or more), extensive edema, ecchymosis and necrosis at the site of injection, and an early and progressive bacteremia, with death taking place within six days. In control nonvaccinated rabbits which had received sulfapyridine, the course, severity and termination of the disease were identical with this.

One group of vaccinated animals which had not received sulfapyridine was tested at the end of forty-eight hours, at which time they showed a well developed partial postvaccination immunity. The dermal lesion was reduced in severity and the fever and bacteremia were less pronounced, both usually terminating in about two days. In but 20 per cent of these rabbits did the disease terminate fatally. Still further reductions in clinical severity were noted in a second group of rabbits tested at the end of seventy-two hours. By the end of ninety-six hours all vaccinated rabbits had acquired a practically "solid" immunity, but 1 of the 12 animals of this group showing a distinct dermal lesion and but 4 developing a slight transient fever. None of the animals of this group developed bacteremia, and there were no deaths. Tests with type II pneumococci showed that this postvaccination immunity is type specific.

Within the limits of the experimental error, parallel tests of vaccinated rabbits treated with sulfapyridine gave identical results: 80 per cent protection from fatal results within forty-eight hours, a 90 per cent reduction in mortality by the end of seventy-two hours and a 100 per cent or "solid" immunity by the end of ninety-six hours. The authors conclude from these data that under the conditions of their experiment sulfapyridine exerted no demonstrable effect on the development of postvaccination pneumococcus immunity.

Serums obtained from the same rabbits were tested for the development of type specific precipitins, agglutinins and mouse protective antibodies. Serums of both untreated and sulfapyridine treated rabbits were, with but one exception, free from demonstrable antibodies until ninety-six hours after vaccination. Of the ninety-six hour serums obtained from 22 "untreated" rabbits, 18 protected mice against 100 minimum lethal doses

1. Wood, W. B., Jr., and Long, P. H.: Ann. Int. Med. **13**: 612 (Oct.) 1939.
2. Edwards, J. C.; Kircher, T. E., Jr., and Thompson, L. D.: Proc. Soc. Exper. Biol. & Med. **42**: 539 (Nov.) 1939.
3. Kneeland, Yale, Jr., and Mulliken, Barbara: J. Clin. Investigation **19**: 307 (March), 735 (Sept.) 1940.
4. Bukantz, S. C., and de Gara, P. F.: J. Immunol. **39**: 195 (Sept.) 1940.
5. Curnen, E. C., and MacLeod, C. M.: J. Exper. Med. **75**: 77 (Jan.) 1942.

and 17 against 1,000 minimum lethal doses of homologous living pneumococci. Only 13 of these serums contained demonstrable type specific agglutinins, and in but 2 of them were there demonstrable type specific precipitins. Practically identical percentages were obtained in the titration of the ninety-six hour post-vaccination serums from animals which had received sulfapyridine. These identical percentages in the "treated" and "untreated" groups show that the development of circulating antibodies is not influenced by previous and concurrent administration of sulfapyridine.

Of particular significance is the fact that an 80 per cent effective tissue immunity as determined by intradermal test is developed at least forty-eight hours before the appearance of demonstrable antibodies. Of the serologic tests the mouse protection titer is by far the most sensitive and the precipitin test the least reliable. Taking into account the different technics used by the earlier clinicians, their apparently contradictory evidence can be readily harmonized. Apparently sulfonamide therapy does not prevent or delay the development of an effective convalescent, type specific immunity to pneumococci. Recovery of sulfonamide treated pneumonia patients is apparently intimately associated with the development of an active immunity.

PERSONNEL FACTORS IN THE NATIONAL HEALTH SURVEY

The controversies over the national health survey of 1935 and 1936 seem especially warranted now that C. C. Lienau [1] has published a statement on the selection, training and performance of the national health survey field staff. This study shows that exceptional but not wholly successful efforts were made to secure competent enumerators and to train them for the work. The selections were unfortunately confined largely to WPA clients. Intelligence and ability tests were used in selecting the staff and, as far as possible, only persons formerly engaged in clerical work were employed. Ninety-five per cent of the enumerators had a high school or college training.

Full recognition is given to the fact that " 'measurement of ability' is not the finished technic that facile present use of the term seems to imply." There was a rather careful supervision and checking of return schedules. The question of the extent to which the tests of intelligence and ability selected a force that collected accurate information is the essential element in determining the accuracy of the returns.

The paper by Lienau postulates that the qualifications of the enumerators and therefore the accuracy of the tests used in selecting them can be measured by the relative number of illnesses reported. The application of the tests brings out some facts of great significance in judging reliability of the entire survey. For instance the number of illnesses reported per thousand households increased steadily with the age, the education and the standing in the tests of intelligence and ability. It also varied widely according to previous occupation. Real estate and insurance agents reported 847 illnesses per thousand and teachers 833, whereas trained nurses found but 556. These figures are for female enumerators only. Male teachers found 891 illnesses per thousand households and "engineers, chemists and draftsmen" 427. This comparison is "from enumerations of more or less parallel population groups, by enumerators of differing honesty and tendency toward omission or error." It is also "supposed that net underenumeration of illness characterizes the average enumerator."

It would seem that the supervisors graded the enumerators by these standards and that it is at least possible that promotion and employment depended to some degree on the number of illnesses reported. This, of course, is not the conclusion of the paper under discussion; but a range of reported illnesses "from 4.27 to 9.00 with an average of 5.97 per household" would seem to raise a question not only as to the accuracy of the enumerator but as to the reliability of the study. This conclusion receives support from the statement that "it seems probable that enumerators who persisted in reporting smaller than average quantities of illness per schedule would presently receive special attention from the supervisor."

1. Lienau, C. C.: The Selection, Training and Performance of the National Health Survey Field Staff, Am. J. Hyg. **34**: 110 (Nov.) 1941.

Current Comment

KELLOGG FOUNDATION AIDS IN THE EMERGENCY

The accelerated educational program in medical schools has brought particularly to the student of limited means many new responsibilities. Already there has been indication that some young men who have progressed far in their medical educational career are having difficulty in financing the program in which time is not available for earning while learning. In this emergency the W. K. Kellogg Foundation has come to the rescue by offering to each one of nearly one hundred and fifty schools of medicine, dentistry, public health and nursing in this country and Canada $10,000 a year to be used for loans to students and scholarships. The foundation is satisfied to leave the matter of scholarships entirely in the hands of the school to use whatever machinery is customary and proper for administration. Indeed, it is planned to set up loan funds so that payments on loans will be made to the school and thus provide a continuing or revolving fund. It is expected only that the scholarship shall be granted on the basis of scholastic ability, char-

acter and need of the applicant in comparison with other applicants. The only restriction suggested is that the scholarship should not amount to more than $500 to any one student in any one year. This is a real contribution to medicine in the war effort. The medical profession may well express its appreciation of the plan and its motivation.

PURKINJE AND THE ORIGINS OF OPHTHALMOSCOPY

Ophthalmologists and medical historians credit von Helmholtz with the invention of the ophthalmoscope. According to Garrison, "ophthalmology and surgery of the eye were put on a scientific basis mainly through the labors of Helmholtz. 'Helmholtz has opened a new world to us,' exclaimed von Graefe." Castiglioni, in his History of Medicine, states: "A new era in the history of ophthalmology began with Helmholtz's invention of the ophthalmoscope in 1850. This great invention made possible for the first time the examination of the retina during life and opened up the whole physiology and pathology of the eyegrounds." Now a recent issue of the *Archives of Ophthalmology* offers a statement by Dr. William Thau:[1] "From the available evidence it clearly appears that the interior and the background of the eye of both animals and man were first observed by Johannes Evangelista Purkině, who made enormous contributions to the sciences, including medicine, and who thus far has not been equaled in the field of ophthalmologic research." Dr. Thau offers in support of this revelation the following quotation from a speech by Heidenhain[2] on the occasion of the centenary of Purkinje's birth:

> John Evangelist Purkinje, founder of microscopic anatomy in Germany, first to elevate physiology to the rank of an independent natural science, is hardly known and rarely recalled. One of his treatises, indeed the most outstanding in the field of sense organs, was almost totally ignored. But it is obvious that Purkinje was given more to the stimulation of thought than to following up productively what he had thought out and noticed. Thus it has happened that a great number of most important facts described in his papers were forgotten, to be rediscovered by other persons after many decades. What a sensation was caused when, in the 50's, Helmholtz discovered the eye mirror on which all modern ophthalmology is based. This instrument serves to illminate the interior of the observed eye, so that the eyeground, which ordinarily is dark, may become visible. Purkinje described for this purpose almost exactly the procedure which thirty years later Helmholtz used. Nowhere in the literature have I found an allusion to Purkinje's discovery.

Not satisfied with this evidence, Dr. Thau succeeded in gaining access to the original copy of Purkinje's thesis in Latin. The following is quoted from an English version of it:

> The clearness or turbidity of the vitreous body is recognized from without on lateral illumination and inspection by determining whether the color of the pupil is normal or cloudy according to the previously mentioned methods applying to the aqueous humor and lens. But I also had a chance to see the interior of the eye where the vitreous body is located when, wearing myoptic lenses, with candle light coming from far back, I examined the eye of a dog in order to learn about the nature of the shine which often marvelously emanates from the eyes of dogs and cats. Lo! Whenever I observed the eye of the little dog from a certain direction, that light seemed to be thrown back, until I discovered that the light is reflected from the hollow surface of the lens into the eye and then returned. When the experiment was immediately repeated with human beings the same phenomenon occurred; indeed, the whole pupil lit up in a beautiful orange color. Being still uncertain about the location of the reflected light, I constructed an artificial eye, which I filled with water, either clear or turbid to some degree, and the light shining through revealed both the background and the nature of the fluid. Thus, from now on practically no membrane or liquid content of the eye will escape the properly reflected light or the scrutinizing eye, and if practitioners, spurning the painstaking inquiry of physiologists, will not disdain or fear this [method], they will find it useful in ocular diagnosis.

Further proof of the priority of Purkinje's discoveries may be found, according to Thau, in some of the older German reference books. This information does not in the least detract from the stature of Helmholtz as a scientist or from the credit due him for devising and constructing the ophthalmoscope. However, as he himself stated (Thau, p. 315):

> The real discoverer is he who had the original idea. Experiments, it is true, are also necessary, but it is easier to institute those than to find the idea, and experiments can be made by any one else.

By Helmholtz's own criterion, therefore, the credit for the origin of the ophthalmoscope should go to Purkinje.

1. Thau, William: Purkyně: A Pioneer in Ophthalmoscopy, Arch. Ophth. **27**: 299 (Feb.) 1942.
2. Heidenhain, Rudolf: Allgemeine Sitzung der schlesischen Gesellschaft für vaterländische Kultur am 17 December 1887 zur Feier des hundertjährigen Geburtstages von Joh. Ev. Purkinje, Jahresb. d. schles. Gesellsch. f. vaterl. Kult. **65**: 1, 1887.

IS LONGEVITY INHERITED?

To determine the actuarial basis of the common belief that age is determined to a large extent by heredity, Dublin and Marks[1] analyzed the records of some seventy thousand persons insured by the Metropolitan Life Insurance Company for whom complete and accurate data of length of life were available concerning them and their ancestors. It is concluded that this study points broadly to a positive relationship between the longevity of parents and offspring, but this holds true only when the parents were still living when the insurance was written. This raises the further question of whether longevity in these cases is really due to inheritance or to environmental conditions. Death of the parents and consequent breaking up of the home create a risk of early death that seems more than to offset any inherited factor. The greater importance of environment is further demonstrated by the fact that the maximum difference in expectation of life due to heredity at the age of 20 does not exceed three years, while there has been an average gain of about five years recorded among men of the same age in the general population during this century. "Certainly, on the basis of conditions in the world today," the study concludes, "the environmentalists have distinctly the better of the argument in so far as relates to the question of longevity."

1. The Inheritance of Longevity—A Study Based on Life Insurance Records by Louis I. Dublin, Ph.D., Third Vice President and Statistician, and Herbert H. Marks, Metropolitan Life Insurance Company, New York.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

THE YOUNG MEDICAL OFFICER GOES TO WAR

FRANK L. APPERLY, M.D., D.Sc.
Professor of Pathology, Medical College of Virginia
Richmond, Va.

The recent spate of papers and lectures on the treatment of war wounds of different parts of the human body by learned specialists brings to mind the rather amusing contrast between my own pre-World War imaginings and the realities. The specialists may indeed carry on their specialties in some base hospital far behind the lines, but the world of the young regimental medical officer is a very different thing indeed. In those far off days I imagined myself rushing from wound to wound on a shell swept battlefield, splendidly doing my duty in the face of the foe. In actual fact I did or saw very little of that noble work.

The great lesson that every medical officer must know, first, foremost and all the time, is that his job is to keep the fighting ranks full, i. e. to keep fit men fit, physically and mentally, and to get slightly sick or wounded men back to the ranks as quickly as possible. After that he may attend to his more humanitarian duties, to tend, comfort and evacuate the severely wounded and the permanently disabled.

The astonishingly varied nature and wide range of the medical officer's work may be partly illustrated and perhaps more interestingly explained by telling something of my own experiences, which were fairly typical and in no way unusual.

Soon after graduation I joined the British Royal Army Medical Corps in June 1915. For some days we were taught army medical drill, stretcher drill and how to ride a horse—none of which I have done since. Sixteen days after joining the army I was on a transport for active service, destination unknown. Not until we approached the strait of Gibraltar did it become pretty obvious that the Dardanelles or our bases in Egypt would see us next.

For the purposes of this article, the remainder can be divided into five periods or phases, each concerned with a different kind of medical work.

EGYPT—AN OVERSEAS BASE

Owing to the urgency for reinforcements for Gallipoli in July 1915, many green troops had arrived in Egypt unvaccinated, uninoculated and still wearing heavy English uniforms. These men were sent to desert camps for hardening. Here the troops suffered from heat, were bored, and found themselves too close to these large Eastern cities with all their evils. Medical officers soon realized that they required all their ingenuity and all their experience of men to deal with difficulties in a world with which they themselves were unfamiliar. Light cool uniforms had to be obtained (later even these were discarded) though no general order had been given for that purpose, so that much personal work and interviews with minor officials and officers had to be done. An early discovery was that the higher the rank of the officer the more easy he was to deal with, when he realized that one was also trying to do his best and that indeed nearly all the loose talk about "brass hats" is nonsense. The only people who made difficulties were newly joined junior officers still full of self importance or perhaps trying to cover up a lack of confidence and experience. Troops had to be vaccinated, which led to trouble with battalion commanders intent on men continuing their training and practicing bayonet fighting on the eighth and ninth days when arms were sore and tempers short. This often required much diplomacy, for, although a blustering medical officer had army regulations to back him up, better results were often obtained by persuasion than by an appeal to higher-ups.

At this time Alexandria and Port Said were crammed with transports and battleships—British, Australian, French, Russian and Italian—and lusty fellows ashore for the first time in weeks mixing with the older arrivals from the desert camps. There were also men of the Indian army, giant dignified Sikhs and the terrible little kilted Ghurkas, called the Indian Highlanders. Gonorrhea and a particularly virulent form of syphilis were rife. To make these cities out of bounds was next to impossible and likely to lead to trouble, so the job fell on the medical officers, straining their ingenuity to the utmost. Medical officers organized games, concerts, clubs and movies, for which the Y. M. C. A. provided the materials. In the cities there were also the social requirements for the men on leave to be attended to. In the camps the main medical work consisted in attending to discharging ears, measles, eye infections and dysentery, but operations—unless essential for the life or the efficiency of the soldier—were avoided on account of the difficulty of asepsis. There were also the treatment of convalescents returned to their units, and the planning and supervision of graduated training. Requiring judgment not possessed by many were the duties of the medical boards, on which we younger men often sat as junior members, to pass on the fate of convalescents—men to be returned to duty, men to be invalided back to England, Australia or India, men unfitted for full service but fit for other employment. In a total war every man can be usefully employed. Before we learned wisdom many breakdowns occurred, and these failures cluttered up the camps. In addition, large convoys of hospital ships from Gallipoli kept discharging thousands of wounded and even more sick (especially dysentery) into Alexandria, Port Said and Cairo, where large hotels and

public buildings had been commandeered by the Medical Corps for use as hospitals. In a smaller way medical officers soon learned to utilize whatever was nearest for their purposes—buildings of all kinds for hospitals, for measles and for venereal patients.

One of my acquaintances summarized our duties thus: one third of the time preventing men getting sick, one third treating sick and wounded and one third finding out what use could be made of the partially disabled.

HOSPITAL SHIPS—LINES OF COMMUNICATION

The time soon came for those of us now fast becoming "old hands" to move up. Unknown to us, but suspected, a new attack was being prepared on the Turkish positions on the heights of Gallipoli. That would mean heavy casualties and therefore many hospital ships. Unfortunately instead of medical officers and nurses being allocated to their ships in Egypt and thus giving them an opportunity to convert their ex-cattle boat or ex-cargo tramp into something like a hospital ship, all were bundled into one transport and sent straight to the Greek island of Lemnos, a few short miles off the Gallipoli coast. Next day was Sunday, August 8, the day of the "big push" and the fiercest battles of the campaign. All day long we watched the heavy bombardment of the heights by the big naval guns, the burning villages and grass fires. All day long we watched the wounded pouring in from the collecting points on the beaches. Only late in the day were we allowed inshore to help or relieve the other doctors and to give them a chance to get their first rest in two or three days. My first duties were those of an orderly, carrying food, hot tea, making myself useful in any way possible. Suddenly six of us were ordered to another ship, an ex-cattle boat, supposed to carry 600 sick and wounded. Without any opportunity to make arrangements for the disposai of our patients, we arrived on board to find 1,100 patients, lying anywhere and everywhere all over all decks, men with dysentery lying alongside men with compound fractures of the femur, without beds, without operating facilities and without medical supplies except for what we carried on our persons or found in the much outdated army medical panniers. Once again we made the best use of what was nearest to hand. Temporary latrines, several scattered on each deck, were erected for the dysentery patients. Emergency measures were improvised to prevent infection of food by the innumerable flies. Army antiseptics were discarded, and wounded limbs soaked in buckets, gasoline cans or any other receptacle which could be made to contain enough sea water and fresh water, half and half. This last, which we believe we were the first to use under similar circumstances, gave excellent results and cut down sepsis. All operations, cut to the absolute minimum, were performed in a hastily improvised operating room on the hatchway. Screening nets and cloth covers were placed on all doors leading to mess rooms, against the opposition of the ship's captain, an old time skipper, who had never seen "such dam' nonsense before." Two or more determined doctors can sometimes convince even an old sea captain. Only four men were buried at sea.

Many similar voyages were made from Gallipoli to various ports—Alexandria, Port Said, Malta, Naples and Gibraltar—where our human cargoes were discharged. Often in spite of precautions, one or more of our medical officers would also be left behind. Occasionally there were variations. Once we were called to the rescue of a torpedoed transport with fifteen hundred Australian troops on board or scattered over the water in boats, rafts or other floating matter. Rescue work, treatment of injuries, exposure and shock provided a lively day. On another occasion a sharp storm at night drove patients crowding the top deck of an overcrowded ship into whatever shelter they could find. In spite of our best efforts to locate and move everybody in a storm on a dark night and without lights (lights of course being forbidden in submarine infested waters) the next day found many badly weakened men under lifeboats and in odd corners to which they had crawled for shelter. Soon after an intolerable stench located others with terribly swollen limbs and gas gangrene. That also was a lively day. We buried more men at sea than usual on that voyage. On other voyages neither doctors nor nurses had beds and slept where they could.

LEMNOS—ADVANCED BASE

Several of the Greek islands were used for advance supply depots, rest camps and as hospitals for the slightly wounded or sick. Of these the chief were Lemnos, Imbros and Samothrace. With a lull in the fighting toward the end of 1915 many of us were ordered ashore to man the rest camps and hospitals. All of these were in tents, with no beds but thin mattresses spread on the ground. However interesting Lemnos might be from a legendary and historical point of view, it is a God forsaken, treeless, rocky and dusty hole to live in. A few ancient Greek villages composed of rough stone houses, windmills, and bullocks drawing primitive plows were the only signs of life. Food and water were scarce until the navy erected a huge condenser. Flies were everywhere, so that one used both hands to convey food from plate to mouth, one hand acting as a fan. The wind was violent. One soldier wrote:

> Is this the soft Aegean wind
> Which Byron wrote about?
> It blows the milk (!) from out your tea,
> The laces from your boots.

(The exclamation mark is mine.) The loose soil became clouds of dust, and when the rains came it changed to feet of mud. Tent supports could not stand upright and hospital tents collapsed on patients. With an eye to the future, however, I was able to "secure" (by methods that might not bear inspection) a number of iron bars, which, driven deep into the island, kept my own tent and those of my patients upright when most others were down. The sight of my snug tent did not improve the temper of a mud caked colonel, who entered with oaths bubbling from the mud around his face. Winter, without wood for fires, brought more privations. Medical work on the island was mostly concerned with small wounds, supervising the work of the rest camps (where, curiously, men who had stood up to months of trench warfare without rest now went down like flies when the tension relaxed) and the camps of the thousands of Egyptian, Greek and coolie laborers employed on the "roads" and wharves. There were also the daily sick parade for "walkers," the ward

rounds for "stretchers," the discharge of the fit to their units and the incapacitated to Egypt or England, medical boards, inspection of food, water, latrines, refuse, camp and lines and finally initiating and managing concerts and games. Even the selection of songs was a job. Hymns made men homesick and restless. The bawdier songs let off steam.

Finally I became a patient myself and was returned to England on the *Aquitania,* now a splendidly fitted out hospital ship with all comforts.

BATTALION MEDICAL OFFICER—DOVER, ENGLAND

Although at first it seemed rather a waste to send an officer with war experience to a battalion of newly raised raw recruits, the wisdom soon became apparent. Many of the bright young graduates of our medical schools, then and now, considered themselves a little too good to be "only a battalion medical officer." They preferred to be with a surgical or other specialist team in a big base hospital. I can tell these bright young men right now that they will learn little, either as men or as surgeons, in a big base hospital. But as a battalion medical officer they will learn vast numbers of things not taught in medical school. The battalion M. O. should be a man of experience, wise among men and something of a doctor, lawyer, father, mother, parson or priest and friend all in one. He has medical charge (and more) of young men taken from civil life, homesick and lovesick, rebellious or sullen, adventurous or timid and what not, who have to be molded into a fighting force. Not only their physical needs but their mental and spiritual needs are his business. In a civilian army bumptious young officers, full of self importance, can drive recruits nearly to rebellion. A wise medical officer who has the great advantage of direct access and responsibility to the colonel only can often, by the right word at the right time, ease serious difficulties between men and officers without apparent interference or sticking his neck out. A little talk sometimes to a miserable soldier, a word here to an officer can do wonders, especially if the doctor already has the prestige of overseas service. These things do not appear in the army manuals but are important nevertheless. It does not lower the prestige of a medical officer to carry the rifle and pack of a footsore soldier on a heavy march, as I have done on many an occasion. When the men know that the doctor is their friend and dependable, the morale of that battalion is high. It cannot be too strongly emphasized that the battalion doctor should be a man of self reliance (he works alone), cool, calm, with professional judgment and judgment of men and, above all, common sense and humor. During this period I served with infantry, coast artillery and antiaircraft artillery, had charge of a garrison hospital ward, had the responsibility of choosing men fit for overseas, vaccinated some 10,000 men, had troubles with medical boards who persisted in sending me men utterly unfit to march or carry a pack, trained men in the use of gas masks and became a minor expert on scabies, lice, corns and gonorrhea. One of my embarrassments as a young officer was having to advise men, often older in years and sin than myself, to avoid loose women and liquor or, if they could not, how to use the army "antivenereal" packets. By great good fortune I discovered an ex-Salvation Army officer, persuaded the colonel to let me have him, and installed him in charge of the prophylactic "washout," where he was very happy distributing literature to his "patients."

BASE HOSPITAL—LONDON

Toward the end of the war I was transferred to the Fifth London General Hospital (St. Thomas's Hospital) in the heart of London and opposite the Houses of Parliament. In the grounds there had been built a number of large wooden wards each holding from forty to eighty-eight beds. Here we had about 1,000 military patients, almost wholly with compound fractures. One ward was given over wholly to vascular wounds, and to this ward, by special arrangement through the War Office, came all such cases from France. In charge was Major General Sir George Makins, then president of the Royal College of Surgeons of England, and I had the good fortune to be his military "resident." In addition I had a small ward of my own and was a member of the Royal Flying Corps (now R. A. F.) Medical Board for recruit officers. On certain nights it was also my duty to meet all hospital trains coming to London stations with sick or wounded from France or elsewhere and to allocate "walkers," "sitters" or "stretchers" to the various hospitals or, if they were very ill, to take them there myself. The work differed little from that in any city hospital, the only diversion being air raids. At that time London was raided on many occasions. With the lighter bombs then in use, patients in the ferroconcrete buildings of city hospitals were safe. (The heavier bombs of 1940, however, have since wrecked a large part of St. Thomas's hospital.) For patients in the wooden huts, matters were different. It was therefore our immediate duty in air raids to move all the latter into the permanent buildings—beds, Thomas's splint and traction apparatus and all—no mean order. Many of these men were shell shocked and highly nervous. Our second duty therefore was to prevent any panic. Immediately or before patients were wheeled into the central halls music, songs and games were started at once by key men. One man banged out some bawdy tunes on the piano. Others sang. The louder the better. Others threw craps or dice. Hilarious party anyhow. If you listened you heard, behind all this, the crash of bombs and the even more unsteadying roar of the antiaircraft 12 pounders situated in parks and vacant lots all over the city. Here indeed the medical officer was the key man. As was his behavior or bearing, so was that of the party. Under no circumstances must he be scared or at any rate show that he was. Later, perhaps, when the raid was over and the patients were back in their wards, he might feel a little shaky, but usually with civilian dead and wounded now arriving at the hospital he had to help the civilian interns and residents and had little time to show it. When that job was finished all was well—and so to bed.

CONCLUSION

Of experiences under fire I have not written, partly because my own experience was small and partly because much has already been written by others. I have tried to present instead those other duties in camp, hospital ship, training depot, base hospital and advanced base which have not, so far as I know, been described elsewhere, so that others perhaps might be helped by those of us who have gone before.

COMMISSIONS FOR MEDICAL STUDENTS

1. The War Department on May 8 granted authority to corps area commanders to waive the provisions of paragraph 5, AR 140-33 and paragraph 7*b*, AR 605-10, for the appointment as second lieutenant, Army of the United States (Medical Administrative Corps), of physically qualified male citizens of the United States above the age of 18 years who are bona fide accepted matriculants at approved medical schools within or without the United States. Officers so appointed will not be ordered to active duty until eligible for appointment as first lieutenant, Army of the United States (Medical Corps).

2. *a.* Appointment will be made without reference to an examining board as prescribed in paragraph 20 *c*, AR 140-5, and without reference to procurement objectives.

b. Appointment will be made without a report of physical examination (WD AGO Form No. 63). Authority is granted to waive the provisions of Section VI, AR 605-10.

c. Applications and accompanying papers as prescribed in AR 605-10 (except report required by paragraph 10*a* (2)(*b*), as amended, will be forwarded by the dean of the medical school to the commanding general of the corps area in which the school is located, together with a certified statement that the applicant is a bona fide accepted matriculant in medicine at the institution.

d. Students attending schools outside the limits of the United States will be charged with the responsibility of proper notification to the deans of the respective schools in order that the applications and accompanying papers as prescribed in paragraph 2 *c* (above) are forwarded to the commanding general of the corps area of permanent residence of the student.

e. Officers appointed under the provisions of this letter will be discharged for the convenience of the government under the following circumstances:

(1) Discontinuance of medical education.

(2) Matriculation at an unapproved school of medicine.

(3) Failure to complete successfully the prescribed full course of medical instruction.

(4) Failure to secure appointment in the Army of the United States (Medical Corps) within one year after completion of the prescribed full course of medical instruction.

f. The Surgeon General will maintain adequate records to assure timely application for appointment as first lieutenant, Army of the United States (Medical Corps), and to assure that individuals are promptly reported to the Adjutant General for discharge as provided above.

3. Properly certified applicants for and qualified students at approved schools of medicine, dentistry or veterinary medicine who already hold Reserve commissions in other arms or services will not be ordered to active duty until they:

a. Come within the provisions of 2 *e* (1), (2), (3), or (4) above, or

b. Successfully complete the prescribed full course of medical instruction, in which latter event they may be appointed in the Medical Corps, Army of the United States, in the grade of first lieutenant.

4. Properly qualified students will be invited to submit applications for appointment, final approval in each case to be made by the commanding general of the corps area in which the properly qualified student maintains permanent residence. The commanding general of each corps area is granted the authority to make such appointments.

5. Notice of appointment will be in the following form:

Date

Subject: Temporary Appointment.

To: 2d Lieut. John Henry Doe, MA-AUS, A 0-0,000,000
549 North Blank Street, New York, N. Y.

1. By direction of the President you are temporarily appointed and commissioned in the Army of the United States, effective this date, in the grade and section shown in address above. Your serial number is shown after A above. You will not perform active duty under this appointment until expressly ordered to active duty by competent authority.

2. This commission will continue in force during the pleasure of the President of the United States for the time being, and for the duration of the present emergency and six months thereafter unless sooner terminated.

3. There is enclosed herewith a form for oath of office which you are requested to execute and return promptly to the agency from which it was received by you. The execution and return of the required oath of office constitute an acceptance of your appointment. No other evidence of acceptance is required.

4. This letter should be retained by you as evidence of your appointment, as no commissions will be issued during the war.

6. Each appointee will be in the Arm and Service Assignment Group. On each copy of notice of appointment except the original a notation "A. & S. A. G." will be placed in the lower left hand corner.

. . . . . .

10. If an appointment is declined or canceled, the record will be filed at corps area headquarters and no report made to this office or to that of the Surgeon General.

11. Department commanders will, in general conformity with this letter, submit to this office individual recommendations for appointment.

12. The letter from this office of Feb. 11, 1942, AG 210.1 Med-Res. (1-26-42)RB-A, Subject: "Commissions for Medical Students," is rescinded except paragraph 5 thereof.

By order of the Secretary of War:

J. A. ULIO,
Major General,
The Adjutant General.

FEDERAL FUNDS TO ESTABLISH RESERVE OF BLOOD PLASMA

On April 11 the sum of $292,500 was allotted from the "Emergency Fund for the President" to the U. S. Public Health Service to establish reserves of liquid, frozen or dry blood plasma or serum albumin for the treatment of casualties resulting from enemy action. Grants will be made to public and private hospitals located not more than 300 miles from ocean or gulf coast under regulations which have now been promulgated by the Public Health Service (*Federal Register* **7**:3448 [May 9] 1942).

To be eligible for a grant, a public or private hospital located not more than 300 miles from ocean or gulf coast must have a capacity of not less than two hundred beds, exclusive of bassinets, or two or more smaller hospitals totaling two hundred beds may submit a cooperative project, one of the participating hospitals being designated as the grantee. Furthermore the hospital must be on the approved list of the American College of Surgeons and the hospital register of the American Medical Association and must have on its professional staff a physician whose qualifications are the equivalent of those required by the American Board of Pathology for its diplomates.

A grant will cover a period of not more than twelve months following the approval of the plan, or not beyond June 30, 1943, and may be used for the purchase of equipment necessary for the preparation of liquid or frozen plasma, reconditioning or minor alterations of existing quarters, necessary traveling and subsistence allowance of $6 a day to cover a training period, if required, of not more than one week for the physician directing the blood and plasma project. No funds made available under a grant may be used for the payment of blood donors. Plans for a project must first be submitted to the Chief Medical Officer, Office of Civilian Defense, and must be approved by the Public Health Service.

A plan must contain information as to the number of hospital beds in the hospital applying for a grant, classified according

to use; the name and qualifications of the physician who will direct the plasma project; a description of any present blood and plasma project; the type and amount of plasma reserve which the hospital desires to prepare; the delivered price of equipment necessary to complete the existing facilities for preparing the plasma, such items to be numbered and described in accordance with the equipment inventory in "A Manual on Citrated Normal Human Blood Plasma," issued by the Office of Civilian Defense or equivalent approved substitute equipment; the cost of materials or labor, if any, needed for adapting existing quarters to the needs of the blood plasma project, and the salaries, if any, to be paid additional personnel until the plasma reserve has been prepared.

The hospital must agree to build up a plasma reserve of at least 1 unit per bed within three months after delivery of the necessary equipment. A unit of plasma is described in the regulations as that amount derived from 500 cc. of citrated whole blood, consisting of about 250 cc. of liquid plasma. The agreed amount of plasma reserve must be maintained for use without charge and only for the treatment of casualties caused by enemy action. The reserve must be released for use in other local hospitals for this purpose on order of the local chief of Emergency Medical Service, or for transfer within the state on order of the state chief of Emergency Medical Service, or for transfer from one state to another on the order of the regional medical officer, Office of Civilian Defense. Liquid plasma must be kept from being outdated by replacement of older by newer plasma. Replaced units may be utilized for current needs of the hospital in the treatment of its regular patients, provided the plasma reserve shall not be allowed to fall below the stated minimum.

All plasma must be prepared in accordance with manuals of the Office of Civilian Defense, prepared by the Subcommittee on Blood Substitutes of the National Research Council. The hospital must agree to continue the project for its current need after the expiration of the federal grant and to maintain for the duration of the war the minimum stated reserve. Thereafter the reserve may be used by the hospital without restriction. A record must be kept of all blood donors, including their blood types, to expedite obtaining donors for emergencies, and any blood plasma project must at all times be subject to inspection by authorized representatives of the Surgeon General of the United States Public Health Service.

Payments will be made on a reimbursement basis for expenditures made in accordance with the approved budget, and application for reimbursement must be notarized and addressed to the Chief Medical Officer, Office of Civilian Defense. Each hospital will be required to submit periodic reports, including clinical abstracts of any untoward experiences encountered in the use of plasma for the duration of the war.

To augment the federal fund thus made available for blood and plasma projects, a supplemental estimate of appropriation has been submitted to Congress by the President, recommending an additional $420,000 for a continuation of the program.

JOINT STATEMENT BY OFFICE OF CIVILIAN DEFENSE AND AMERICAN RED CROSS

To secure unity of effort and avoid duplication of facilities in meeting civilian needs arising from enemy action, this statement is issued by the Office of Civilian Defense and the American National Red Cross for the guidance of defense councils and Red Cross chapters.

It is the responsibility of local defense councils to see that adequate provision is made for all services required in the event of bombing or other enemy attack. During an emergency period the commander of the Citizens' Defense Corps will exercise control over all such services.

With respect to emergency medical services and emergency feeding, housing and clothing, provision should be made in each community in conformity with the following principles:

EMERGENCY MEDICAL SERVICES

During bombing or other enemy attack, all services are directed from the control center in charge of the commander of the Citizens' Defense Corps. Responsibility for the care of those injured as a result of enemy action rests with the Emergency Medical Service of the Citizens' Defense Corps under the direction of the chief of the Emergency Medical Service.

Red Cross chapters assist the Emergency Medical Service by (*a*) recruiting and training volunteer nurses' aides, who will be utilized by the Emergency Medical Service at base and casualty hospitals, casualty stations and first aid posts; (*b*) furnishing lists of persons trained in first aid to be enlisted by the Emergency Medical Service as members of its stretcher teams; (*c*) providing dressings, bandages and supplementary equipment as the chapter may decide in consultation with the chief of Emergency Medical Service; (*d*) equipping and operating emergency ambulances to be assigned to the Emergency Medical Service and to serve under its direction; (*e*) providing supplementary transportation for walking injured and for Emergency Medical Service personnel. During the emergency period, ambulances and motor units assigned to such transportation service will be under the direction of the chief of Emergency Medical Service or the transport officer. The Emergency Medical Service of the Office of Civilian Defense will not be duplicated by the Red Cross but will be utilized by the Red Cross in natural disasters.

EMERGENCY FEEDING, HOUSING AND CLOTHING

In the joint statement dated April 17, 1942 of the Office of Defense Health and Welfare Services and the American Red Cross it is agreed: "With respect to the emergency period during which special facilities must be made available to meet emergency needs without notice, the Federal Security Administrator will look to the local facilities and resources of the American Red Cross to provide food, clothing and temporary shelter." These services will be provided locally during an emergency period by the Red Cross under the control of the commander of the Citizens' Defense Corps in accordance with detailed plans to be worked out jointly by the commander, the Red Cross chapter and the public welfare authority.

Defense councils should avoid duplication of these facilities. Where an Emergency Food and Housing Corps has already been organized and equipped to the satisfaction of the commander of the Citizens' Defense Corps, its function should be coordinated with the functions of the public welfare authorities and the Red Cross chapter and if possible consolidated.

After the emergency period the appropriate public agencies are expected to undertake the care of civilians in accordance with plans developed in conjunction with the Office of Defense Health and Welfare Services and the Federal Security Administrator. Funds will be made available for this purpose by the federal government through the Federal Security Administrator. Local welfare agencies and Red Cross chapters should be guided in their relationships by the agreement signed on April 17, 1942 by the Office of Defense Health and Welfare Service and the American Red Cross.

All Red Cross volunteers enlisted in the emergency feeding and housing service, and all other Red Cross volunteers who are to be in service during and following bombing or other enemy action, will register with the local Civilian Defense Volunteer Office. The cards of all such registrants are to be marked so as to show that these volunteers are in Red Cross service. In order to obtain necessary freedom of movement during and immediately after enemy action, Red Cross personnel certified to the commander by the chapter for emergency feeding, housing and clothing services will be furnished with identification cards issued to Citizens' Defense Corps personnel and will be authorized to wear the official armband.

This statement supersedes the joint statements of Sept. 4 and Dec. 22, 1941.

NORMAN H. DAVIS, Chairman,
American Red Cross.

JAMES M. LANDIS, Director,
Office of Civilian Defense.

Approved May 18, 1942.

ORGANIZATION SECTION

REGISTRATION OF DIATHERMY APPARATUS ORDERED BY FEDERAL COMMUNICATIONS COMMISSION

All possessors of apparatus designed, constructed or used for generating radio frequency energy for therapeutic purposes, described generally as diathermy apparatus, must register each such device with the Federal Communications Commission in Washington, D. C., by June 8, under Order No. 96, promulgated by the commission on May 18. Any person who wilfully violates any provision of the order or who falsifies any information required to be furnished to the commission becomes subject to a fine of not more than $10,000 or imprisonment for not more than ten years, or both, and any unregistered apparatus may be confiscated.

Application for registration must be on forms obtainable from the commission in Washington or from any of its field offices. Individual applications must be made for each set of diathermy apparatus to be registered, and physicians should keep this in mind when requesting application forms. The executed forms must be forwarded to the secretary of the Federal Communications Commission in Washington. On receipt of an application, if the commission finds that sufficient and reliable information has been furnished, a nontransferable certificate of registration will be issued to the applicant, which must be conspicuously affixed to the apparatus for which it is issued.

Any person or organization hereafter in any manner coming into possession of apparatus required to be registered must apply for a certificate of registration within fifteen days after obtaining such apparatus. If registered apparatus is transferred, sold, assigned, leased, lent, stolen, destroyed or otherwise removed from the possession of the registrant the commission must, within five days, be notified of that fact and the name of recipient of the diathermy apparatus be furnished to the commission if such person is known to the registrant.

According to a news release issued by the commission, this order does not apply to persons owning sun lamps, infra-red lamps or ultraviolet ray devices. It applies only to apparatus generating electromagnetic energy at any frequency between the limits of 10 kilocycles and 10,000 megacycles. Apparatus in the possession of the United States government, its offices or agents, or apparatus which is under contract of delivery to the United States government is not subject to the registration order.

This order is a wartime security measure and its promulgation follows a determination previously reached by the Office for Emergency Management, Defense Commission Board, in Order No. 4, that the national security and defense and the successful conduct of the war demand that the government have knowledge of all persons who possess apparatus equipped for the transmission of radio frequency energy. Diathermy apparatus may not only interfere with radio reception but can be easily converted into short wave radio transmitters and thus may be used to furnish valuable information to the enemy.

Application forms for the registration of diathermy apparatus may be obtained from the Federal Communications Commission, Washington, D. C., or from any of the field offices of the commission listed. Physicians should apply immediately to the nearest office for an application form to cover each unit of diathermy apparatus possessed.

Field Offices, Federal Communications Commission

District No.	*Address*	*City*
1	Inspector in Charge, Federal Communications Commission, Customhouse, 7th Floor,	Boston.
2	Inspector in Charge, Federal Communications Commission, 748 Federal Building, 641 Washington Street,	New York.
3	Inspector in Charge, Federal Communications Commission, Room 1200, New U. S. Customhouse, 2d and Chestnut streets,	Philadelphia.
4	Inspector in Charge, Federal Communications Commission, Fort McHenry,	Baltimore.
5	Inspector in Charge, Federal Communications Commission, Room 402, New Post Office Bldg.,	Norfolk Va.
6	Inspector in Charge, Federal Communications Commission, 411 Federal Annex,	Atlanta, Ga.
Suboffice	Radio Inspector, Federal Communictions Commission, Box 77 (208 Post Office Bldg.),	Savannah, Ga.
7	Inspector in Charge, Federal Communications Commission, P. O. Box 150 (312 Fed. Bldg.),	Miami, Fla.
Suboffice	Radio Inspector, Federal Communications Commission, 203 Post Office Building,	Tampa, Fla.
8	Inspector in Charge, Federal Communications Commission, 308-309 Customhouse,	New Orleans.
9	Inspector in Charge, Federal Communications Commission, Room 404, Federal Bldg.,	Galveston, Tex.
Suboffice	Radio Inspector, Federal Communications Commission, Box 1527 (329 Post Office Bldg.),	Beaumont, Tex.
10	Inspector in Charge, Federal Communications Commission, P. O. Box 5373 (500 U. S. Terminal Annex Bldg.),	Dallas, Tex.
11	Inspector in Charge, Federal Communications Commission, 539 U. S. Post Office and Courthouse Bldg., Temple and Spring streets,	Los Angeles.
Suboffice	Radio Inspector, Federal Communications Commission, 307 U. S. Customhouse and Courthouse Bldg., Union and F streets,	San Diego, Calif.
12	Inspector in Charge, Federal Communications Commission, 328 Customhouse,	San Francisco.
13	Inspector in Charge, Federal Communications Commission, 805 Terminal Sales Building,	Portland, Ore.
14	Inspector in Charge, Federal Communications Commission, 808 Federal Office Building,	Seattle.
15	Inspector in Charge, Federal Communications Commission, 504 Customhouse,	Denver.
16	Inspector in Charge, Federal Communications Commission, 208 Uptown Post Office and Fed. Cts. Bldg., 5th and Washington streets,	St. Paul.
17	Inspector in Charge, Federal Communications Commission, 809 U. S. Court House,	Kansas City, Mo.
18	Inspector in Charge, Federal Communications Commission, 246 U. S. Courthouse,	Chicago.
19	Inspector in Charge, Federal Communications Commission, 1029 New Federal Building,	Detroit.
Suboffice	Radio Inspector, Federal Communications Commission, 541 Old Post Office Building,	Cleveland.
20	Inspector in Charge, Federal Communications Commission, 526 Federal Building,	Buffalo.
21	Inspector in Charge, Federal Communications Commission, Aloha Tower,	Honolulu, T. H.
22	Inspector in Charge, Federal Communications Commission, P. O. Box 2987 (322-323 Federal Building),	San Juan, Puerto Rico.
23	Inspector in Charge, Federal Communications Commission, P. O. Box 1421 (7-8 Shattuck Building),	Juneau, Alaska.

OFFICIAL NOTES

THE ATLANTIC CITY SESSION

Atlantic City Civic Groups Invite Physician Members

The Local Committee on Arrangements for the annual session of the American Medical Association in Atlantic City announces a meeting of the combined civic groups of Atlantic City for visiting physicians who are members of Kiwanis, Rotary, Lions, Exchange, Reciprocity and similar organizations at Hackney's Restaurant, June 9, at 12:30 p. m. Dr. Perrin H. Long of Johns Hopkins University Medical School will speak on "Medical Science in the War Effort."

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Change in Status.—H. R. 6362 has passed the House, imposing an annual registration requirement on persons licensed to practice the healing art in the District of Columbia. The registration fee will be $2.

MEDICAL BILLS IN CONGRESS

Change in Status.—S. 2025 has passed the Senate and House of Representatives, proposing to readjust the pay and allowances of personnel of the army, navy and marine corps, coast guard, coast and geodetic survey and Public Health Service. When this bill was considered on the floor of the House, Representative Costello, California, offered an amendment to the section of the bill pertaining to the appointment of commissioned officers in the army as follows: "Provided, That nothing in this section shall preclude the appointment of commissioned officers for service in the Medical Corps in the Army of the United States made in part from among graduates of reputable schools of osteopathy, who are licensed or eligible for license under state law to practice medicine, or osteopathy, as the case may be, and who are otherwise qualified under such regulations as the President may prescribe." The proposed amendment was rejected.

Bills Introduced.—H. J. Res. 312, introduced by Representative Barden, North Carolina, proposes to authorize an additional appropriation of $1,000,000 for the fiscal year of 1943 for expenditure in carrying out the provisions of an act to provide for the promotion of vocational rehabilitation of persons disabled in industry or otherwise. H. R. 7089, introduced by Representative Brooks, Louisiana, would direct the Secretary of War to take such action as may be necessary, and as may be possible in view of the number of registered pharmacists serving in or whose services are available to the army, to assure that a registered pharmacist is placed in charge of each army dispensary or similar establishment from which drugs are dispensed.

WOMAN'S AUXILIARY

Arkansas

Mrs. William Hibbitts, program chairman for the Woman's Auxiliary to the American Medical Association, conducted a quiz at the January meeting of the Bowie and Miller counties medical auxiliary at the home of Mrs. R. R. Kirkpatrick. The quiz, entitled "To Be Informed," was prepared for auxiliaries to be used throughout the United States. The questions pertained to politics, public relations, the American Medical Association and its auxiliaries. For correct answers, members were awarded prizes from a "grab bag."

Georgia

The Woman's Auxiliary to the Baldwin County Medical Society held a meeting at the home of Mrs. L. P. Longino in Milledgeville. Mrs. Richard Binion, president, presided. Col. Kyle T. Alfriend talked on world conditions.

The Woman's Auxiliary to the Fulton County Medical Society held its January meeting in the new Academy of Medicine in Atlanta. Mrs. Murdock Equen, president, presided. Dr. Sam Guy, head of the department of chemistry at Emory University, talked on the part science is playing in the war.

The new Academy of Medicine was dedicated recently. The woman's auxiliary had charge of serving a turkey dinner to 500 guests and members, Mrs. Eustace Allen, Mrs. Crawford Barnett, Mrs. Hal Davison and Mrs. W. W. Anderson, ably assisted by their committees, having charge. Mrs. Murdock Equen, president, and various chairmen from the auxiliary, assisted the Fulton County Medical Society with the decorations and equipping of the building.

Various auxiliaries over the state observed Doctor's Day on March 30, this occasion being one on which members of the profession both living and dead are honored. A Georgia woman, Mrs. C. B. Almand, of Winder, first originated Doctor's Day, and it was first observed by her auxiliary, that of Barrow County, in 1933. In 1934 the state auxiliary adopted the idea and in 1935, through the efforts of Mrs. J. Bonar White of Atlanta, then national first vice president, the Woman's Auxiliary to the American Medical Association accepted it. It was on March 30, 1842 that Dr. Crawford W. Long, a Georgia physician, administered the first ether anesthetic at his office in Jefferson. Mrs. Y. Harris Yarbrough, of Milledgeville, is state chairman of Doctor's Day. The observance calls for some act of kindness, gift or tribute to the medical profession.

Iowa

On January 19, members of the Woman's Auxiliary to the Pottawattamie County Medical Society entertained at a dinner to honor physicians who had practiced in the county for forty years or more. The dinner was held in Council Bluffs. Mrs. William R. Hornaday of Des Moines, state president, addressed the auxiliary on February 16 in Council Bluffs, on "The Objectives of the Auxiliary." Officers for 1942 are Mrs. Grant Augustine, president; Mrs. Robert S. Moth, vice president; Mrs. John P. Cogley, secretary, and Mrs. Sydner D. Maiden, treasurer.

New Jersey

Through the generosity of Dr. and Mrs. Wells P. Eagleton of Newark there was recently added to the Academy of Medicine of Northern New Jersey a new building. This means that in addition to holding its meetings at the academy, the Essex County auxiliary may now do so in its own rooms. A meeting room and lounge are for the use of the auxiliary members. A streamline kitchen holds the promise of many nice parties. The Red Cross Roll Call for Essex County has just been completed, and the auxiliary's booth was responsible for getting 498 new memberships. Members worked on the Community Chest drive and also on the sale of stamps for the Prevention of Tuberculosis League. Many members are active on the local Defense Council. Mrs. Frank Bien, program chairman of the Essex County auxiliary, has a plan for those programs which are nonmedical; one of the program committee will read a five minute paper written by a local physician on a medical subject. This was tried out with success at the last meeting.

New York

Columbia County auxiliary at the business meeting in Hudson, January 27, donated $10 to the Red Cross war fund drive.

At the last meeting of the Fulton County auxiliary Mrs. Alfred Madden, state legislative chairman, spoke on "What Physicians' Wives Can Do in the State Program of Medicine." After the meeting the members did Red Cross work.

The outstanding project of the Oneida County auxiliary for the year is "blood typing." Within the group there are two first-aid units.

The Nassau County auxiliary sponsored a nutrition forum in February.

A general plan of defense work is being carried on by Onandaga County. At the last meeting, Mrs. James R. Wilson gave an outline on "Organized Housewives." The March meeting will be an heirloom party. In April Dr. Louis H. Bauer will speak on "Nutrition."

Wisconsin

Mrs. W. T. Clark and Mrs. T. J. Snodgrass gave reports of the state meeting held recently in Madison. The meeting was conducted by the president, Mrs. H. E. Kasten, Beloit.

The Woman's Auxiliary to the Brown-Kewaunee-Door County Medical Society met at the home of Mrs. L. D. Quigley, Green Bay, recently. Twenty-five members were present. Dr. Mary Allen of the Bureau of Maternal and Child Health of the state board of health spoke on her work in child health centers.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Dr. Austin Appointed State Health Officer.—Dr. Burton F. Austin, Montgomery, has been chosen state health officer to succeed the late Dr. James N. Baker, Montgomery. Dr. Austin, who had been acting health officer, is a native of Marl and graduated at the University of Alabama School of Medicine, University, in 1917. He served in the U. S. Army in France in the first World War and in 1920 joined the state department of health as health officer of Morgan County and later served as health officer of Madison County and district health officer in charge of thirty north Alabama counties. In 1935 he was named director of the state bureau of hygiene and nursing, now the bureau of maternal and child health, a position he held at the time of Dr. Baker's death last November.

CALIFORNIA

Portrait of First President of State Society.—The California Medical Association has been given a portrait of Dr. Benjamin Franklin Keene, one of its founders and first president. The picture is the gift of Mrs. J. E. Hays, Atlanta, Ga., granddaughter of Dr. Keene, who is state historian and director of the state department of archives and history. Dr. Keene, originally of Georgia, was one of seventy-six members of the profession from sixteen counties of central and northern California who met at Sacramento on March 12, 1856 to form a state society. Dr. Keene, state senator from El Dorado County, was elected president. He died the following September.

Will Provides for Tuberculosis Foundation. — The establishment of a foundation for the prevention and treatment of tuberculosis has been provided for in the will of Charles H. Hastings in memory of his father, Charles Cook Hastings. The will stipulates that the Charles Cook Hastings Home be built either on "several large parcels of property near Beaumont, Calif.; Banning, Calif., "or on the Mesa Alta Ranch, near Pasadena, which is also Hastings property. The will instructs the executors to build a sanatorium to be conducted and maintained on a charitable basis. The Hastings estate is reported to amount to more than two million dollars. After payment of annuities to friends and servants, the entire estate will go to the foundation.

CONNECTICUT

Sesquicentennial Celebration of State Society. — The Connecticut State Medical Society will observe its one hundred and fiftieth anniversary at Wesleyan University, Middletown, June 3-4. Included among the speakers not mentioned in THE JOURNAL, February 21, page 655, are:

Dr. Albert H. Miller, Providence, R. I., New England, The Cradle of Surgical Anesthesia.
Dr. Henry S. Ruth, Merion Station, Pa., Trends in Spinal Anesthesia.
Dr. George M. Lewis, New York, Recent Advances in Practical Mycology.
Dr. Walter Guernsey Frey Jr., New York, Elisha North, Pioneer Connecticut Ophthalmologist.
Dr. Warren B. Davis, Philadelphia, Deformities of the Face and Their Correction.
Dr. Harry D. Sonnenschein, New York, Office Procedures for Foot and Ankle Diseases.
Dr. Charles Bradley, East Providence, R. I., Diagnostic and Therapeutic Aspects of the Problem of Behavior Disorders in Children.
Mr. John J. Bloomfield, National Institute of Health, Bethesda, Md., War's Influence on Industrial Medicine.
Dr. James H. Biram, Hartford, Treatment of Industrial Burns with Sulfathiazole.
Dr. John C. Whitehorn, Baltimore, Psychiatry as a Basic Medical Science.
Dr. Paul P. Swett, Bloomfield, History of Orthopedic Surgery in Connecticut.
Dr. Harry E. Stewart, New Haven, Physical Therapy in War Injuries.
Dr. Edwin Parker Hayden, Boston, Anerobic Perianal and Perirectal Infections.
Dr. Lewis G. Cole, New York, Reminiscences of the Early Days of Roentgenologic Diagnosis.

One session will be devoted to "Medicine of the Present and the Future." On the second day there will be a "historical meeting." Dr. Logan Clendening, professor of clinical medicine and history of medicine, University of Kansas School of Medicine, Kansas City, Kan., will deliver the oration of the day on "Opposition to Change as a Contribution to Social Progress." The anniversary dinner will be addressed by Col. Fred W. Rankin, President-Elect, American Medical Association.

ILLINOIS

Society News. — At the annual meeting of the Mercer County Medical Association, April 14, at Aledo, Dr. Norbert C. Barwasser, Moline, spoke on "Diagnosis and Treatment of Cutaneous Malignancies."——Dr. Donald K. Hibbs, Chicago, discussed "Urology in General Practice" before the Adams County Medical Society on March 10.

New Tuberculosis Officers.—Dr. Frederick M. F. Meixner, Peoria, was reelected president of the Illinois Tuberculosis Association at its annual meeting in Danville, April 18. Other officers include Drs. William J. Bryan, Rockford, and Arthur S. Webb, Glen Ellyn, vice presidents, and John P. Denby, Carlinville, treasurer. Mary B. Meade, D.D.S., Carmi, is secretary.

Subsidized Tumor Diagnostic Service. — The state department of health has opened another state subsidized tumor diagnostic service at the Burnham City Hospital in Champaign. This is the fourth project of its kind to be established by the state department of health in cooperation with local county medical societies. Similar projects are now under construction at DuQuoin and Ottawa.

Chicago

Alumni Banquet.—The medical division of Northwestern University Alumni Association will hold its seventy-fifth annual faculty-alumni reunion dinner in the grand ballroom of the Knickerbocker Hotel, May 29, at 6:30 p. m.

Refugee Wins Right to Take Examination to Practice.—A writ of mandamus to force the state department of registration to permit Dr. Martha Rosin, a refugee physician from Germany, to take an examination for a license to practice medicine was issued on May 13 by Circuit Judge John Prystalski, according to the Chicago *Tribune*. Dr. Rosin is 38 years old and came here in 1940. In February 1941 the Illinois board ruled that no application for examination to practice medicine would be accepted from graduates of foreign schools. Dr. Rosin claims to have graduated at the University of Freiburg in 1930. She is reported to have applied for citizenship.

Amante Rongetti Leaves Prison.—Amante Rongetti was released from the Joliet Penitentiary on May 9 after serving the maximum period under his sentence with full time off for good behavior, newspapers report. In 1930 Rongetti was sentenced to prison for from one to fourteen years for manslaughter on a charge of causing a death through an illegal operation. He began his sentence on Oct 17, 1931, having been found guilty of violation of the Harrison Narcotic Act. The U. S. Supreme Court denied the plea of Rongetti for a review of the Illinois Supreme Court decision affirming his conviction on a charge of manslaughter. In Rongetti's first trial he was sentenced to death. When the supreme court granted a new trial he was found guilty of manslaughter. This verdict was set aside and the third trial followed. His license to practice medicine was revoked by the state department of registration and education May 4, 1932, on the ground of his conviction of manslaughter.

MASSACHUSETTS

Institute for Hospital Administrators.—The Second New England Institute for Hospital Administrators will be held at Harvard Medical School, Boston, June 15-25, under the chairmanship of Dr. Charles F. Wilinsky, executive director and superintendent, Beth Israel Hospital, Boston. This year the emphasis will be placed on the role of hospitals in the war. The institute will be conducted by the American College of Hospital Administrators, the New England Hospital Assembly in cooperation with hospital associations of the New England states, New York, New Jersey and Pennsylvania, with Harvard Medical School, Boston University School of Medicine and Tufts College Medical School, all in Boston.

Dr. Walter Cannon to Retire.—Dr. Walter B. Cannon, George Higginson professor of physiology at Harvard Medical School, Boston, will retire with the title emeritus on September 1. Dr. Cannon was born in Prairie du Chien, Wis., Oct. 19, 1871 and graduated at Harvard Medical School in 1900. He was instructor in zoology there from 1899 to 1900, instructor in physiology from 1900 to 1902 and assistant professor from 1902 to 1906. He has held his present professorship since Sept. 1, 1906. Many honors have been accorded to Dr. Cannon during his teaching career, including honorary degrees, prizes and memberships in special societies. He received the Distinguished Service Medal during the World War. In 1939 he was elected president of the American Association for the Advancement of Science.

MISSISSIPPI

Courses on Nutrition.—The state extension service and the department of home economics of the Mississippi State College, State College, through the state nutrition committee, are sponsoring a series of three one day nutrition meetings for three successive months in all the counties of the state.

Changes in Health Officers.—Dr. John W. Dabbs, formerly health officer of Geneva County, Ala., has been named health officer of the Oktibbeha County Health Department at Starkville. —— Dr. Revis A. Brannon Jr., Utica, has been named director of the southeastern health district covering George, Green, Stone and Perry counties. —— Dr. George E. Riley, Jackson, has been named health officer of Clay County, with offices in West Point.——Dr. Victor P. Genge is the new director of the Lafayette County health department, succeeding Dr. Thomas L. Owings, Oxford, who resigned to enter private practice in Alabama.——Dr. Joe H. Price, formerly district health officer, McLeansboro, Ill., has been appointed health officer of Tishomingo County, succeeding Dr. William R. Armstrong, Iuka, who has entered army service.

NEW JERSEY

Society News.—The Society of Surgeons of New Jersey will hold its spring meeting May 27 at Montclair; clinics will constitute the day's program. An evening dinner will be addressed by Circuit Judge Joseph G. Wolber, Montclair.—— The Cumberland County Medical Society was addressed on April 14 at Millville by Dr. George Wilson, Philadelphia, on "Shock Treatment in Mental Disease."——Dr. George F. Hoch, New York, discussed "Treatment of Urinary Tract Infection" before the Passaic County Medical Society on May 14 in Paterson.

NEW YORK

State Society Endorses Insurance Plans.—The house of delegates of the Medical Society of the State of New York has approved and voted to "sponsor and support in every manner possible" three corporations in the state offering medical insurance to subscribers, according to the New York *Times*. The groups that were given endorsement are the Western New York Medical Plan, Inc., of Buffalo; Medical and Surgical Care, Inc., Utica, and Medical Expense Fund of New York, Inc., of Brooklyn, which are said to "have conformed to the principles prescribed by organized medicine for the protection of the interest of both the public and the profession in the organization and operation of medical insurance." The resolution acknowledging the society's action was adopted without a dissenting vote.

Cancer Teaching Day.—June 18 has been designated "cancer teaching day" in Buffalo, with sessions at the Hotel Statler. The sponsoring agencies are the Medical Society of the County of Erie, University of Buffalo School of Medicine, Eighth District Branch of the New York State Medical Society, New York State Medical Society and the division of cancer control of the state department of health. The speakers will be:

Dr. Chevalier L. Jackson, Philadelphia, Cancer of the Larynx—Early Diagnosis and Criteria for the Selection of Methods of Treatment.
Dr. George F. Cahill, New York, Hematuria and Cancer of the Genitourinary Tract.
Dr. Frank E. Adair, New York, Carcinoma of the Breast—Diagnosis, Treatment and Results.
Dr. Thomas E. Jones, Cleveland, Surgery and Radiation in the Treatment of Malignancies of the Colon and Rectum.

Dr. Cornelius P. Rhoads, New York, will address the dinner session on "Recent Studies in the Production of Cancer by Chemical Compounds, the Conditioned Deficiency as a Mechanism."

New York City

Technician Killed While Demonstrating X-Ray Machine.—Miss Edith Fox, x-ray technician and assistant to Dr. Arthur S. Unger, director of the division of roentgenology at Sydenham Hospital, suffered a fatal electric shock on May 6 shortly after she had started to demonstrate an x-ray machine to a class of three technician students at the hospital, according to the New York *Times*. Miss Fox is said just to have turned the machine on and was stepping up the voltage when the accident occurred. The machine was of the so-called "shock proof" type.

Personal.—Dr. William M. Dunning, a charter member of the Bronx County Medical Society, was given a dinner on April 25 by the Bronx Eye and Ear Infirmary in recognition of his completion of fifty years in the practice of medicine. —— Dr. Maximilian A. Ramirez, president of the Medical Society of the County of New York, was guest of honor at a dinner on April 23. Among the speakers were Drs. Edward M. Bernecker, commissioner of hospitals, Samuel J. Kopetzky, George Baehr, John S. Kenney and Nathan O. Ratnoff. Dr. Adolph G. G. DeSanctis was toastmaster.

Academy Commends Psychiatric Clinics. — The public health relations committee of the New York Academy of Medicine, commending both the diagnostic and the treatment clinic for psychiatric cases of the children's division of the domestic relations court as important and necessary, recommended in a report made public on April 28 that the treatment clinic be financed out of city funds and that it have a larger staff, including at least two full time psychiatrists, one or more psychiatric social workers and "pediatricians who would be responsible for general medical work."

Course on Tropical Medicine.—The New York Post-Graduate Medical School, Columbia University, will offer a five day course on tropical medicine, May 25-29, under the direction of Dr. Zacharias Bercovitz. Included among the lecturers will be:

Dr. Eugene R. Kellersberger, executive director, American Mission to Lepers, African Trypanosomiasis.
Dr. Walter J. K. Clothier of the Presbyterian Board of Foreign Missions, Filariasis.
Dr. Thomas T. Mackie, Amebiasis: Diagnosis, Differential Diagnosis, Treatment and Prophylaxis.
Dr. Henry E. Meleney, Relapsing Fevers.
Dr. Ward J. MacNeal, Yellow Fever: Diagnosis and Preventive Vaccination.
Dr. Howard Fox, Syphilis and Pinta.
Dr. Bercovitz, Tropical Hygiene.
Dr. Stuart P. Seaton, Princeton, N. J., for seventeen years a medical missionary in Hainan, South China.

PENNSYLVANIA

Institute on the Exceptional Child.—"The Wartime Adjustment of the Exceptional Child" will be the theme of the eighth institute on the exceptional child, under the auspices of the child research clinic of the Woods Schools, Langhorne, May 26. The speakers will include:

Dr. Erich Benjamin, Baltimore, Social Adjustment During Early Childhood and Its Failures.
Caroline B. Zachry, Ph.D., New York, Educational Philosophy for the School for Exceptional Children.
Emily T. Burr, Ph.D., New York, Vocational Training for the Exceptional Child During the War Emergency.
Dr. Paul V. Lemkau, first lieutenant, M. C., U. S. Army, Washington, D. C., Military Service.
James H. S. Bossard, Ph.D., Lansdowne, The Impact of War on the Family.

Combined Annual Sessions. — The annual clinic of the Westmoreland County Medical Society and the annual meeting of the Tenth Councilor District Medical Society were held in Greensburg on May 7. The speakers included:

Dr. William A. McHugh Jr., Uniontown, Congenital Hypertrophic Pyloric Stenosis.
Dr. Thomas G. McLellan, Connellsville, Glaucoma in General Practice.
Dr. Samuel A. Ruben, Washington, Does Cesarean Section for Prematures Offer Better Chances for Viability Than Vaginal Delivery.
Dr. Elmer Highberger Jr., Greensburg, Pneumothorax.
Dr. David P. McCune, McKeesport, Hematuria.
Dr. La Mar H. Davenport, Du Bois, Ruptured Peptic Ulcer.
Dr. John W. Fredette, Pittsburgh, Sulfonamides in Bone and Joint Surgery.

At this session fifty year testimonial certificates were presented from the state medical society to the fellow members of the Tenth Councilor District who have been in practice more than fifty years.

Philadelphia

Premature Baby Deaths. — On July 1 the Philadelphia department of health will launch a campaign to reduce the death rate of babies born prematurely. Simultaneously a city ordinance will go into effect compelling physicians to report premature births to the department of health within two hours. The report stated that the mortality rate for premature babies in the city is 13.5 per thousand.

Medal for Scholastic Standing.—The will of the late Dr. Howard A. Sutton stipulates that his medical instruments and books are to be offered for sale to members of the medical fraternity Alpha Mu Pi Omega, the proceeds to be used to purchase medals to be awarded annually to the undergraduate member of the fraternity who shall have attained the highest scholastic standing during the preceding year at the University of Pennsylvania. Dr. Sutton at one time served on the faculty of the department of anatomy at the university medical school. He died March 21.

WEST VIRGINIA

Personal.—Dr. William E. McIlvain, Charleston, director of the bureau of tuberculosis of the state health department and for the past two years in charge of the state's mobile x-ray unit, resigned, April 6, it is reported, to enter the U. S. Navy.

State Health Conference.—The West Virginia State Health Conference was held at Martinsburg, May 11-13, with Dr. Victor H. Vogel, assistant chief, division of mental hygiene, U. S. Public Health Service, Washington, D. C., giving the opening address, on "Mental Health in War and Peace." Other features included a symposium on communicable disease control and a panel discussion, led by Dr. Reginald M. Atwater, New York, on "Planning a Local Health Program in the Light of the Present Crisis."

Joe Savage in the Air Corps.—Mr. Joe Savage, for many years executive secretary of the West Virginia Medical Association and business manager of its journal, has been granted a leave of absence for the duration of his service in the Army Air Corps. Captain Savage is stationed at Miami Beach. Mr. Charles Lively has been appointed acting executive secretary. He has been serving as clerk of the U. S. District Court for the Southern District of West Virginia. Between 1933 and 1941 he was clerk of the West Virginia Senate.

GENERAL

Dermatologists Cancel Meeting.—The American Dermatological Association announces that its 1942 meeting has been postponed. The meeting was to be held in Hot Springs, Va., May 31-June 4.

Class Reunions and Dinners.—There will be a reunion of the class of 1932 of the University of Pennsylvania School of Medicine at the Hotel Madison, Atlantic City, June 10, 6 to 8 p. m. Admission $3.

Plastic Surgeons' Meeting.—The American Association of Oral and Plastic Surgeons will hold its annual meeting at the Barbizon-Plaza Hotel, New York, May 28-30, under the presidency of Dr. Jerome P. Webster, New York. Clinics will be held at St. Clare's, Presbyterian, Lenox Hill, Post-Graduate and Polyclinic hospitals. The association has always held a clinical session, but this year a number of short papers will be presented on subjects of current interest.

American Otological Meeting.—The seventy-fifth meeting of the American Otological Society, Inc., will be held at the Marlborough-Blenheim Hotel, Atlantic City, N. J., May 28-29, under the presidency of Dr. Ernest M. Seydell, Wichita, Kan. Among the speakers will be:

Dr. Ralph A. Fenton, Portland, Oregon, The Influence of Aviation on Otology.
Dr. John M. Brown, Los Angeles, Actinomycosis of the Temporal Bone.
Dr. Hermon Marshall Taylor, Jacksonville, Fla., Neurological Complications of Serum Sickness with Special Reference to the Ear.
Dr. Hans Brunner, Chicago, Encephalography.
Drs. Robert S. Schwab and Richard R. Carter, Boston, Electroencephalography in Relation to Otology.

American Orthopaedic Association.—The annual meeting of the American Orthopaedic Association will be held in Baltimore, June 3-6, under the presidency of Dr. George E. Bennett, Baltimore. The tentative program includes the following speakers:

Dr. Kellogg Speed, Chicago, Postmetastatic Survival of Osteogenic Sarcoma.
Dr. Henry W. Meyerding, Rochester, Minn., Spondylolisthesis.
Dr. Wallace H. Cole, St. Paul, Pin Fixation of War Fractures.
Dr. Lee E. Farr, Wilmington, Del., Indications for the Intravenous Use of Amino Acid Mixtures in Surgery.
Dr. William E. Gallie, Toronto, Ontario, Canada, Fracture of the Odontoid Process.
Dr. Carl E. Badgley, Ann Arbor, Mich., Spontaneous Fracture of the Femur Following Radiation Therapy for Pelvic Malignancy.
Dr. Luthero Vargas, Brazil, S. A., Repair of Complete Acromioclavicular Dislocation with the Aponeurosis of the Short Head of This Biceps.

American Ophthalmological Society.—The seventy-eighth annual meeting of the American Ophthalmological Society will be held at The Homestead, Hot Springs, Va., June 1-3, under the presidency of Dr. Allen Greenwood, Boston. Among the speakers will be:

Dr. William H. Crisp, Denver, A New Cross Cylinder Test of Astigmatic Axis, Without Use of Test Type.
Drs. Peter C. Kronfeld, Helen Isabelle McGarry and Homer E. Smith, Chicago, Effect of Mydriatics on the Intraocular Pressure in "Primary" Wide Angle Glaucoma.
Drs. Cecil S. O'Brien and James H. Allen, Iowa City, Allergic Keratoconjunctivitis.
Drs. Phillips Thygeson and Alson E. Braley, New York, Local Sulfonamide Therapy of Catarrhal Conjunctivitis.
Drs. Henry P. Wagener and J. Grafton Love, Rochester, Minn., Studies of the Fields of Vision in Cases of Rathke Pouch Tumors.
Dr. Algernon B. Reese, New York, Precancerous Melanosis and Malignant Melanoma of the Conjunctiva.

American Human Serum Association.—The annual meeting of the American Human Serum Association will be held at the Chalfonte-Haddon Hall, Atlantic City, N. J., June 8, under the presidency of Dr. Maurice A. F. Hardgrove, Milwaukee. Among the speakers will be:

Earl W. Flosdorf, Ph.D., Lansdowne, Pa., Drs. Harriet M. Felton, Philadelphia, and Anthony Bondi, Rochester, N. Y., Incidence of Agglutinins Specific for H. Pertussis and B. Parapertussis in Sera from Adults and Children.
Edwin J. Cohn, Ph.D., Cambridge, Mass., Properties of the Various Globulins and Albumins of Serum and Plasma.
Drs. Frank W. Hartman and Henry N. Harkins, Detroit, The Physical Properties and Physiological Responses to the Intravenous Injection of Pectin Solutions.
Dr. Wilhelm C. Hueper, New York, Hematic and Organic Reactions Caused by Several Macromolecular Plasma Substitutes.
Drs. Ernest E. Muirhead and Joseph M. Hill, Dallas, Texas, The Rationale of Concentrated Plasma Protein Solution in the Treatment of Shock.

Association of Genito-Urinary Surgeons.—The fifty-fourth annual session of the American Association of Genito-Urinary Surgeons will be held at the Hotel Hershey, Hershey, Pa., May 27-29, under the presidency of Dr. Homer G. Hamer, Indianapolis. Included among the speakers will be:

Dr. Thomas P. Shupe, Cleveland, Division of Aberrant Blood Vessel to the Kidney Without the Production of an Infarct—Report of a Case.
Drs. William F. Braasch, and William W. Wood Jr., Rochester, Minn., Clinical Perinephritis and Blood Pressure.
Dr. Emerson C. Smith, Montreal, Quebec, Canada, The Upper Urinary Tract in Cases of Neurogenic Bladder.
Drs. John K. Ormond, George H. Wadsworth and Harold V. Morley, Detroit, Pancreatic Lesions Confusing Urologic Diagnosis—Report of Two Cases.
Drs. George Gilbert Smith and Wyland F. Leadbetter, Brookline, Mass., Effect of Irradiation on the Lower Ureters.
Dr. Alexander Randall, Philadelphia, Eight Year Results of Castration for Prostatic Malignancy.
Drs. Charles M. McKenna and Joseph H. Kiefer, Chicago, Pseudohermaphroditism Due to Hyperactivity of the Adrenal Cortex.

Association for the Surgery of Trauma.—The fourth annual session of the American Association for the Surgery of Trauma will be held at the Copley-Plaza Hotel, Boston, June 4-6, under the presidency of Dr. Henry C. Marble, Boston. Included among the speakers will be:

Dr. Arthur W. Allen, Boston, Peripheral Circulation in Relation to Trauma.
Dr. Idys Mims Gage, New Orleans, Traumatic Arterial Aneurysms of the Peripheral Arteries: The Pathology, Clinical Manifestations, Diagnosis and Treatment.
Dr. Garrett M. Brownrigg, St. John's, Newfoundland, Frostbite and Allied Conditions as Observed in Shipwrecked Mariners.
Drs. George M. Curtis and Louis C. Roettig, Columbus, Ohio, Traumatic Rupture of the Spleen.
Dr. Sidney C. Wiggin, Boston, Anesthesia for the Surgery of Trauma.
Dr. John A. Caldwell, Cincinnati, Subtrochanteric Fracture of the Femur—An Advantageous Approach for Open Fixation.

The annual banquet Friday evening will be addressed by Comdr. Albert Warren Stearns, U. S. N. R. Medical Corps, on "The Medical History of the Siege of Boston" and Col. Joseph A. MacFarlane, Toronto, Ont., Canada, consulting surgeon with the Canadian Forces in Britain.

Neurological Meeting.—The sixty-eighth annual meeting of the American Neurological Association will be held at the Drake Hotel, Chicago, June 4-6, under the presidency of Dr. Lewis J. Pollock, Chicago. Included among the speakers will be:

Drs. Loyal Davis and George E. Perret, Chicago, Cerebral Thromboangiitis Obliterans.
Dr. Walter L. Bruetsch, Indianapolis, Rheumatic Endarteritis of Cerebral Vessels: Sequel of Rheumatic Fever.
Drs. Franklin G. Ebaugh, Clarke H. Barnacle and Karl T. Neubuerger, Denver, Fatalities Following Electric Convulsive Therapy.
Drs. Ralph W. Gerard, Julian M. Tobias and David B. Clarke, Ph.D., Chicago, Spinal Ganglion Respiration.
Dr. Charles Davison, New York, Effect of Vitamin E Therapy on the Central Nervous System in Amyotrophic Lateral Sclerosis.
Drs. Henry A. Riley and Maurice Frocht, New York, Myasthenia Gravis: Incidence in Two Sisters.
Dr. Victor E. Gonda, Chicago, A New Tendon Stretch Reflex and Its Significance in Lesions of the Pyramidal Tracts.

The Chicago Neurological Society will give a luncheon at the Drake Hotel Friday afternoon for the members of the association. The annual dinner will be held Friday evening at 7:30. The American Association of Neuropathologists will hold its meeting at the Drake Hotel, June 4.

Committee on the Common Cold.—The American Association of Industrial Physicians and Surgeons announces the formation of a new committee on the common cold. Dr. Adolph G. Kammer, medical director, Inland Steel Company, 3210 Watling Street, East Chicago, Ind., is chairman of the committee; members include Drs. Mark W. Garry, Montreal Mining Company, Montreal, Wis.; Charles E. Shannon, medical director, Marshall Field Store, Chicago; James S. Chalmers, Sand Springs, Okla.; Howard G. Lafferty, Sharon, Pa., and Michael J. Lepore, chief, nutrition clinic, Columbia University

Medical Center, New York. The committee will study the preventive aspects of the common cold and submit reports to the president of the association of industrial physicians and surgeons. Physicians who are investigating one method or the other of cold prophylaxis and who do not intend to publish reports of their studies are invited to submit their data for study and correlation.

Meeting of Pathologists. — The American Society of Clinical Pathologists will hold its twenty-first annual meeting and ninth seminar at the Benjamin Franklin, Philadelphia, June 4-7, under the presidency of Dr. John L. Lattimore, Topeka, Kan., whose address will be entitled "The Pathologist as a Physician." Among the speakers will be:

Dr. Virgil H. Moon, Philadelphia, The Dynamics of Shock as Related to Diagnosis and Treatment.
Dr. Israel Davidsohn and Beatrice Toharsky, M.S., Chicago, The Rh Factor: An Antigenic Analysis.
Dr. Philip Levine, Newark, N. J., The Role of Isoimmunization in Erythroblastosis and Other Conditions.
Dr. Fritz Levy, Elkins, W. Va., Megakaryocytes and Blood Platelets.
Dr. Albert B. Sabin, Cincinnati, The Natural History of Human Poliomyelitis.
Dr. Herbert Lund, Cleveland, Scientific Evidence Useful in Establishing the Time of Death.
Drs. Samuel A. Levinson and Harold C. Voris, Chicago, Cerebral Injuries by Mechanical Violence.

A symposium on medicolegal autopsy will be held Saturday morning. The annual banquet Saturday evening will be addressed by Col. James E. Ash, M. C., U. S. Army, Washington, D. C.; Capt. Charles W. O. Bunker, medical director, U. S. Navy, Bethesda, Md., and Dr. Morris Fishbein, Editor, THE JOURNAL, Chicago.

American Gastro-Enterological Meeting. — The forty-fifth annual meeting of the American Gastro-Enterological Association will be held at the Hotel Claridge, Atlantic City, June 8-9, under the presidency of Dr. Russell S. Boles, Philadelphia. The scientific program will open with a symposium on the diseases of the digestive tract in relation to the present emergency: Drs. Zacharias Bercovitz, New York; Clifford J. Barborka, Chicago; Donald T. Chamberlin, Boston; Lemuel C. McGee, Wilmington, Del., and Lee C. Gatewood, Chicago. Other speakers on the program will include:

Dr. Donal Sheehan, New York, Relationship of the Hypothalamus to the Large Bowel.
Drs. George B. Eusterman and Byrl R. Kirklin, Rochester, Minn., Significance of the Malfunctioning and Closed Stoma in the Gastroenterostomized Stomach.
Dr. Donovan C. Browne, New Orleans, Gastric Changes in Advanced Pulmonary Tuberculosis.
Drs. Rudolf Schindler and Marie Ortmayer, Chicago, Histopathology of Chronic Gastritis.
Drs. Jack Edward Berk, Jacob Earl Thomas and Martin E. Rehfuss, Philadelphia, The Duodenal Acidity and Neutralizing Ability as Criteria of the Acid Factor in Duodenal Ulcer.
Drs. Grant H. Laing, James M. Beazell and Andrew C. Ivy, Chicago, The Relationship Between Roentgenographic Abnormalities of the Gallbladder and Constipation.

At the annual dinner Dr. Max Einhorn, New York, will be presented with the Friedenwald Medal by Dr. William Gerry Morgan, Washington, D. C. Dr. Frank H. Lahey, Boston, President of the American Medical Association, will be the principal speaker, on "Medicine and the War."

LATIN AMERICA

Personal. — Dr. Carlos Bonorino Udaondo, Buenos Aires, Argentina, was recently appointed honorary professor of the Faculty of Medical Sciences of the University of Buenos Aires. Dr. Udaondo was dean of the faculty from 1929 to 1931.

Neuropsychiatric Reunion. — The third reunion of Pan American neuropsychiatric societies will be held in Buenos Aires in November. Members of the board of directors of the committee of organization of Argentina include Drs. Nerio Rojas, professor of legal medicine, Faculty of Medicine of Buenos Aires, president; Arturo Ameghino and Vicente Dimitri, vice presidents, and Felipe M. Cia, secretary. All correspondence should be addressed to Dr. Rojas, Cátedra de Medicina Legal de la Facultad de Ciencias Médicas de la Universidad de Buenos Aires.

FOREIGN

Public Health Under Hitler's Rule.—According to Dr. Conti, reich health leader, in the *Völkische Beobachter*, as quoted by NDZ, March 27, the typhus menace has been banished. Typhus in March decreased 70 per cent as compared with the number of new cases in December 1941. An epidemic of typhus is said not to have developed in the reich territory during the winter, but in 1941 there were 165 cases among German nationals and 121 among Jews in the old reich. In the incorporated eastern territories there were 34 cases among the Germans and 2,750 among the Jews. In Berlin itself there were only 4 cases in February. Anticipating the danger, Dr. Conti said all necessary precautions were taken in time, the German frontier having been protected by a network of delousing stations. In 1939 and 1940 precautionary measures were started with the repatriation of Germans from districts near Russia. Three thousand people from Volyhnia and Galicia were deloused every day in Lodz alone. There has been a shortage of soap, rendering delousing difficult, but the Germans have developed soapless preparations, it is said, which are equally effective. For Germans in Greater Germany the danger of typhus is now said to be practically nonexistent.

According to Havas, March 22, the depopulation of France has increased since 1935, and the death rate exceeds the birth rate. The secretary of state for national education, M. Caropine, has therefore organized courses and lessons on demography in schools, so that children may learn about this danger to their country.

Stefani, March 24, states that the National Congress of War Surgery will be held at Rome late in May. Presiding will be General Alfredo Ingravalle, director general of the army medical department, and Prof. Raffaele Bastanelli, secretary of the National Fascist Syndicate of Doctors. Delegates from Germany and other axis countries are expected to attend.

The momentous negligence of France confronts both party and state today with great tasks in their fight against tuberculosis. According to NDZ, March 18, tuberculosis in Alsace has reached an incidence twice as high as in Baden. Dr. Steininger, who was called to Strasbourg as tuberculosis consultant, Dr. Sprauer, head of the state health services, and Dr. Pychlau, gauamtsleiter for people's health in the NSDAP, gave an interview in which they are reported to have said that tuberculosis has spread because, under French rule, restrictions against this disease were directed chiefly to safeguard the livelihood of the patients. But the payment of grants is no solution to the problem; the community must help these patients by timely diagnosis and treatment and not merely by sympathizing with them. Tuberculosis centers have been set up in the thirteen health offices in Alsace, equipped with x-ray apparatus and staffed by experts. The Strasbourg tuberculosis center has given expert advice to 1,200 patients a month. The x-ray mass examination unit of the office for the people's health, which was set up explicitly for Alsace, has since January 1941 taken about forty thousand roentgenograms of chests and in this way has found many cases of tuberculosis which previously were unknown. All these patients, regardless of their financial status, will be treated, it is said, without delay. The insurance institute will pay in full for the insured patients, and the welfare institutions will pay for those who are unable to pay themselves. In the case of farmers and independent craftsmen who are not insured and who have insufficient means, the tuberculosis relief scheme of the National Socialist Welfare Organization will pay the expense.

Since several sanatoriums owned by the city of Paris are now in danger zones, the authorities have acquired the De Launay Estate at Reuilly and converted it into a one hundred and fifty bed sanatorium for patients with tuberculosis, according to Radio Lyons, March 25.

CORRECTION

New York Psychoanalytic Society and Institute.—The New York Psychoanalytic Society and Institute issued a statement on Nov. 25, 1941 in which, among other things, it claimed to be the only organization for training in psychoanalysis chartered by the University of the State of New York. The New York Psychoanalytic Society and Institute now desires to correct the error by pointing out that the New York Psychoanalytic Institute was chartered by the state of New York and not by the University of the State of New York. The Commissioner of Education of the State of New York gave consent to the filing of a charter, but such consent was not subject to construction as an approval of the Education Department, the Board of Regents or the Commissioner of Education, of the purposes and objects of the institute. It is further pointed out in the statement of correction issued by the New York Psychoanalytic Society and Institute that, as far as the University of the State of New York is concerned, the status of the New York Psychoanalytic Institute does not differ from that of the American Institute for Psychoanalysis. This will also correct the last paragraph of the general news item in THE JOURNAL, April 25, page 1507, entitled "Statement by New York Psychoanalytic Society and Institute."

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 4, 1942.

The Status of Medical Women in the Fighting Services

In 1939 medical women were recruited for the fighting forces. They were offered "relative rank" without commissions but with similar status and allowances as men. This offer was accepted; but when the government gave commissions to officers of the women's services, including the nursing service, trouble began. Medical women were offered commissions in these services. They complained that, instead of having commissions in the medical services on equal terms with men, they were asked to work with the army medical corps, though not an integral part of it. Although financially they were equal to men, their status was inferior. As a result of negotiations they were allowed to retain their old status of "relative rank" if they preferred, but this does not satisfy them. The Medical Women's Federation, which exists to uphold the rights of medical women, holds that the commissions offered in the women's forces do not secure professional equality between men and women doctors. This is a fundamental principle of the federation. It says that medical women volunteered for service in, not with, the medical services.

The Physiologic Limit to Sprinting for War Production

The Industrial Health Research Board of the Medical Research Council has issued a report on work in war production based on investigations of fifty factories employing two hundred thousand workers. The time lost through sickness, injury and absence without permission varied with the weekly hours of work. It was usually low when the hours were less than sixty weekly but increased as the hours increased up to seventy-five. The findings suggest that over an extended period the hours should not generally exceed sixty or sixty-five for men and fifty-five to sixty for women. The workers were stimulated to increased output after the fall of France. Although it was physiologically impossible to maintain the maximum level reached, output has since remained above the previous level. The beneficial effect of a reduction of excessive hours with inauguration of staggered holidays was reflected in an increase in the rate of working afterward. Adjustment to factory life was difficult for women unaccustomed to it, particularly for those with domestic responsibilities.

The report concludes that man is not a machine, an idea which dies hard. For maximum production good health is necessary, and for this adequate food, regular periods of leisure and reasonable conditions of work. War time tends to obscure these truths. As man is not a machine, he has the power to "rise above himself" and by force of will to exceed his ordinary maximum. Hence the amazing success of emergency efforts. Unfortunately, industry often fails to acknowledge that the effort is extraordinary and complains when this becomes ordinary. The last war showed that after a number of hours the best will in the world cannot keep up the pace. Steady sustained effort pays better in the long run than violent spurts.

Precautions Necessary with Roentgen Rays

The damage sustained by surgeons when using the roentgen rays in the manipulation of fractures and the removal of foreign bodies has led the British X-Ray and Radium Protection Committee to draw up the following rules. The rays may be used in two ways: 1. Screening or taking roentgenograms; radiography should be the usual procedure and involve no exposure of the hands or person to a direct beam. 2. Manipulating the fracture under fluorescent screen control; this inevitably involves great risk and cannot be rendered safe, for the surgeon's hands must come into the direct beam of the rays. Only in exceptional cases should this method be adopted, and then only on the responsibility and under the direction of the senior surgeon.

The operating room should be satisfactorily darkened. Lights should be dimmed as far as possible before screening, and no lights should face the surgeon. The previous films in the case should be seen and memorized and not scrutinized in a bright viewing box immediately before examination. It is essential that the surgeon should prepare his eyes for screening: a minimum of five minutes in the dark should be allowed. This can also be attained by using a single red light in the room or by wearing dark or (preferably) red goggles for some minutes before screening. The apparatus should be operated by a radiographer specially trained. He should be given definite instructions by the radiologist as to the limits in which he must use the apparatus. The tube-screen distance should not be less than 20 or more than 30 inches. The apparatus should be set to give not more than 65 kilovolts. For thin parts and children a lower voltage is adequate; 3 milliamperes is the maximum screening current that should be used. As a safeguard an automatic "cutout" can be used. All apparatus should be shock proof. An aluminum filter of 1 or 1.5 mm. should be fixed in the tube aperture, so as to furnish a total filtration of not more than 2 mm. of aluminum. Cones or cylinders to limit the x-ray field are essential. The radiographer should watch to see that the beam is constantly kept within the limits of the screen. The hands of the operator or of the assistant should not come within the direct beam.

Manipulation of fractures under screen observation should be done only in exceptional cases, and the time occupied should be limited to a minute. Even with one rapid manipulation with the hands in the direct beam the tolerance dose may be much exceeded. The fluorescent screen fitted to the head and supplied with a hood is a very dangerous device which should never be used.

Feeding the Nation

The minister of food has given a review of his work in 1941, which shows that we have a nutritional policy of wide scope to keep the nation well in spite of war restrictions. The beginning of 1942 finds us fighting fit, and all the statistics indicate that we shall remain so during the year. "The Germans were determined to starve us," said Lord Woolton, minister of food, "and the early part of 1941 was an anxious time for the ministry." Then the Americans came forward with generous supplies under the lend-lease act, and our seamen ensured their safe arrival. The result was that by the beginning of the third year of the war stocks were so improved that some of the bulk foods were higher than before the war. As the war has now become a world war, we must be continually prepared for variation in foods and in amounts. Provided there is enough of one thing or another, that is all which matters. Having collected the food there remains the equally complicated task of distributing it fairly. Lord Woolton claims that we are the only country at war which has been able to increase its rations.

With control of distribution goes control of prices. Taking certain food prices in 1914 (before the previous great war) as 100, the cost rose continuously to a peak of 278 in 1920. At the outbreak of this war we started with a figure of 138. That rose steadily to 170 in June 1940, since which time it has fallen to the present level of 164. The cost of food to the consumer has been stabilized both by price control and by subsidies, which now total $500,000,000 a year. Bread has been the main subsidized food, but in 1941 eggs and potatoes were subsidized for the first time. Food has been directed to those whose need is greatest—milk to children, adolescents, expectant and nursing mothers and invalids; extra rationed foods to canteens serving industrial workers; more cheese and meals from vans, for agricultural workers. Provision is about to be made for meals on the job for 94 per cent of the miners.

PARIS

(From Our Regular Correspondent)

March 19, 1942.

Tuberculosis and Food Restrictions

Since 1913 the mortality of tuberculosis has diminished 60 per cent in Paris and 44 per cent in all France. During the war of 1914-1918 there was a transitory increase in tuberculosis. Since the beginning of 1941 a continuous increase of tuberculosis has occurred, as pointed out at a meeting of the Academy of Medicine, Sept. 2, 1941 by Prof. Marcel Moine. In comparison to the first six months of 1939, the mortality due to tuberculosis of the respiratory organs increased in the first six months of 1941 by 20.4 per cent and of all other forms of tuberculosis by 30.4 per cent. The departmental laboratory of the Oise, which does work for several dispensaries, reports that the frequency of requests for sputum examinations has increased 38 per cent at Beauvais and 101 per cent at Compiègne and that the positive bacteriologic examinations of new cases have increased. In comparison to 1938 there is the following increase of positive examinations per thousand samples examined: in 1938, 54.3; in 1939, 59.1; in 1940, 72.2; in 1941, 211. Compared with 1938 the increase of bacillary intensity can be estimated to be 290 per cent.

At a meeting of the Société médicale des hôpitaux de Paris, Ravina stated that he observed a great number of first infections and many acute attacks in persons who until the last few months enjoyed perfect health. Ravina gives several reasons for this. The army took in a great number of formerly tuberculous persons. Weariness has resulted from overwork, alimentary insufficiency and captivity. The retreat of the armies, the exodus of the population, the poor conditions of life, have caused a revival of this disease. Moral factors, as Laënnec emphasized, have had a great part. Research is going on in order to classify the types of tuberculosis. It can already be stated that there are two main categories: 1. The form for which the outbreak goes back to June-September 1940, and which is caused by fatigue and moral shocks, shows a tuberculosis type of a more polymorphic appearance and less grave prognosis. 2. The bacillary bronchopneumonia with rapid evolution; these cases have started since the beginning of 1941 and are chiefly due to food shortage.

At the same meeting Charles and François Flandin reported on an inquiry which they made at the hospital of St. Louis in Paris and in the private practice of various physicians into the influence of food restrictions on tuberculosis of the skin and lymph glands which until now have been without change. On the other hand, they have noted an increase in cases of Hodgkin's disease, of which the relationship to tuberculosis is believed to have been established by various research workers.

Sulfonamide Therapy and Bronchiectasis

At a recent meeting of the Academy of Medicine, Professor Bezançon discussed the interesting problem of sulfonamide therapy in cases of bronchiectasis. Sulfapyridine reacts positively in acute typical pneumonia but often is ineffective in bronchopneumonia or abscess of the lungs. Bezançon supposed that the positive influence is chiefly in cases with fresh inflammation; as soon as a lesion exists, fragments of dead tissue hinder the bacteriostatic action of the drug. The same thing can be stated for war wounds. In order to make the action efficacious, one has to clean the wound of dead tissue. Bezançon has observed, however, that even in complicated pulmonary cases an unexpected positive result is sometimes obtained. In bronchiectasis the infection and the dilatation of the bronchi cause pain, cough and expectoration. The aim of sulfonamide treatment is not to cure the bronchial dilatation but to improve the state of the patient by fighting the infection. In 7 cases of bronchiectasis treated with sulfapyridine the results have varied. A woman now 24 developed bronchiectasis at the age of 6 after bronchopneumonia. All search for tuberculosis was negative. The patient has incessant cough and cyanosis of the face and nails. She is very thin and has a temperature always over 38 C. (100.4 F.). The expectoration amounts to 300 to 400 cc. a day. There was no result whatever obtained with any treatment. After the administration every day of 3 Gm. of sulfapyridine for four days the temperature sank to 37 C. (98.6 F.), the expectoration diminished to 125 cc. and the cyanosis diminished. During the twenty-five days of administration of the drug the patient's state was good; then leukopenia developed and the treatment was stopped. For six days after this medicament was stopped the improvement persisted. Then the expectoration increased to 400 cc., dyspnea and cyanosis reappeared and the temperature oscillated between 36.5 and 39.2 C. (97.7 and 102.5 F.). A blood examination showed 15,000 leukocytes. The medication was resumed and the patient's condition improved the next day. For a year 0.75 to 2.5 Gm. of sulfapyridine a day has been given for ten days and then stopped for two or three days. The administration of sulfapyridine powder into the bronchi did not give positive results. The lesion itself has not been modified. The excellent results are always transitory, and as soon as the medication is suspended the symptoms reappear. Bezançon explains the various results among the other cases as due to the different forms of bronchiectasis. In many cases of bronchial dilatation, as in many tuberculous cavities, the expectoration does not come from morbid foci alone but also from the neighboring bronchi. Under these conditions the failures of sulfonamide treatment are comprehensible, as the disorders do not result from infection alone.

Surgical Treatment of Cerebral Hemorrhage

Lhermitte and Guillaume, at a recent meeting of the Academy of Medicine, read a paper on the surgical treatment of cerebral hemorrhage in 2 cases. In the first case left facial paralysis, the Babinski reflex (right) and lateral left hemianopsia were present. The cerebrospinal fluid gave negative Wassermann and Kahn reactions. After some days the patient had hallucinations and did not answer questions. The pupils were dilated, they reacted weakly to light and the fundus of the eye showed stasis of the optic papilla. The patient became comatose and they decided to intervene to save his life.

Under local anesthesia, with the patient in a half sitting position, a vertical temporal incision was made and the cranium trephined. The dura mater appeared tense and violet hued. The opening was enlarged by means of a gouge and first the dura mater and then the temporal convolutions were incised, revealing a hemorrhagic focus the size of a nectarine, which was removed by aspiration and by means of a curet. After hemostasis the dura mater, the aponeurosis and the skin were sutured. Some hours after the operation the patient recovered consciousness. After three days all pathologic symptoms had disappeared except the hemianopsia. After a fortnight the patient was cured except for a slight reduction in the field of vision of the left eye. The same brilliant result was obtained in the second case.

This operation cannot be performed in all cases of cerebral hemorrhage; in many cases one does not find only one hemorrhagic focus, a hematoma, but many which are not determined by vascular rupture but by a massive erythrodiapedesis. Lhermitte and Guillaume believe that ventriculography is not always indicated to diagnose the foci. This examination is indicated only in cases in which the neurologic signs do not point to the seat of the hemorrhagic foci. An enlarged trepanation is not indicated on account of the extreme sensibility to traumatism of patients with intracerebral hematomas, especially as an enlarged opening by means of the gouge is sufficient for this operation.

Deaths

Clinton Hart Merriam, Berkeley, Calif.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1879; founder and director for many years of the United States Biological Survey; conducted biologic and ethnologic explorations in the Far West; in 1931 was awarded a Roosevelt medal for distinguished service in the advancement of the study of natural history; past president of the American Ornithologists Union, American Society of Naturalists, the Biological Society of Washington, the Anthropological Society of Washington and the American Society of Mammalogists; member of the National Academy of Sciences, American Philosophical Society and the Washington Academy of Sciences; foreign member of the Zoological Society of London; author of "The Birds of Connecticut," "Mammals of the Adirondacks" and "Geographic Distribution of Life in North America" and many other books; aged 86; died, March 19.

George J. Newgarden ✠ Lieutenant Colonel, U. S. Army, retired, Washington, D. C.; Jefferson Medical College of Philadelphia, 1889; entered the medical corps of the U. S. Army as an assistant surgeon in November 1892; was commissioned a major Nov. 23, 1905; retired April 24, 1907 for disability in line of duty; returned to active duty May 2, 1917 and served until 1919; retired as a lieutenant colonel under the Act of June 21, 1930; veteran of the Spanish-American War and World War I; aged 77; died, March 25, in the Walter Reed General Hospital.

Richard Joseph Coyne, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1924; member of the Medical Society of the State of Pennsylvania; from 1927 to 1931 assistant in laryngology and rhinology, from 1931 to 1933 instructor in laryngology and rhinology and from 1933 to 1936 demonstrator in laryngology and rhinology at his alma mater; examining physician for draft board number 63; served during World War I; aged 44; died, March 25.

Aspinwall Judd ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1896; formerly adjunct professor of surgery at the New York Post-Graduate Medical School; at one time attending surgeon at the Lutheran Hospital of Manhattan; formerly affiliated with the Broad Street Hospital, now known as the Downtown Hospital, and was on the staff of the Bellevue Hospital; aged 74; died, March 17, of coronary embolism.

George Thomas Conley, Williamson, W. Va.; Louisville (Ky.) and Hospital Medical College, 1908; member of the West Virginia State Medical Association; fellow of the American College of Surgeons; past president and secretary of the Mingo County Medical Society; formerly member and president of the school board; aged 60; surgeon and co-founder of the Williamson Memorial Hospital, where he died, March 20, of carcinoma.

William Humes Houston ✠ Lieutenant Colonel, U. S. Army, retired, Key West, Fla.; University of Maryland School of Medicine, Baltimore, 1900; an Affiliate Fellow of the American Medical Association; entered the medical corps of the U. S. Army in 1920; rose through the various grades to that of lieutenant colonel in 1937, when he retired for disability in line of duty; served during World War I; aged 66; died, March 20.

Charles Emerson Townsend ✠ Newburgh, N. Y.; Bellevue Hospital Medical College, New York, 1892; fellow of the American College of Surgeons; president of the board of managers, consulting surgeon and formerly chief surgeon and chief of the hospital staff of St. Luke's Hospital; consulting surgeon, Highland Hospital, Beacon, and the Goshen (N. Y.) Hospital; aged 71; died, March 16, of agranulocytic angina.

Maurice Lincoln Fisher ✠ Mansfield, Ohio; Yale University School of Medicine, New Haven, Conn., 1924; fellow of the American College of Surgeons; member of the American Association for Thoracic Surgery and the American College of Chest Physicians; formerly medical director of tuberculosis work in Richland County; chest consultant, Mansfield General Hospital; aged 41; died, March 18.

Victor Augustus Reed ✠ Lawrence, Mass.; Harvard Medical School, Boston, 1897; formerly medical examiner for the fifth Essex district; served as a line officer in the National Guard in 1902 and later as a captain in the medical corps at Fort Williams, Portland, Maine; on the staff of the Lawrence General Hospital; aged 73; died, February 24, at his home in Methuen of coronary thrombosis.

Harry Z. Hibshman ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1908; member and past president of the American Proctologic Society; fellow of the American College of Surgeons; professor of proctology at the Temple University School of Medicine; proctologist, Temple University Hospital; consulting proctologist, Northeastern Hospital; aged 62; died, March 17.

Charles Jules Lowen, Denver; Long Island College Hospital, Brooklyn, 1909; member of the Colorado State Medical Society; fellow of the American College of Surgeons; formerly instructor in surgery at the University of Colorado School of Medicine; on the staffs of St. Joseph's Hospital and the National Jewish Hospital; aged 56; died, March 26, of coronary thrombosis.

Baylis Haynsworth Earle ✠ Passed Assistant Surgeon, U. S. Public Health Service, Greenville, S. C.; Medical College of the State of South Carolina, Charleston, 1892; entered the U. S. Public Health Service as an assistant surgeon, April 9, 1900 and became a passed assistant surgeon July 26, 1905; formerly county health commissioner; aged 72; died, March 31.

Edgar Elliott Findlay ✠ Passed Assistant Surgeon, U. S. Public Health Service, Ashland, Ky.; Ohio State University College of Medicine, Columbus, 1935; was appointed an assistant surgeon in the U. S. Public Health Service, April 1, 1937 and a passed assistant surgeon, April 1, 1940; aged 31; died, March 28, of asphyxiation.

Francis Holmes Matthews ✠ Liberty, Mo.; University Medical College of Kansas City, 1900; past president and secretary of the Clay County Medical Society; past president and vice president of the state board of health; physician in charge of the Missouri Odd Fellows Home Hospital; aged 75; died, March 23.

Frank R. England, Montreal, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1885; fellow of the American College of Surgeons; formerly professor of surgery at his alma mater; consulting surgeon, Montreal General Hospital and the Woman's General Hospital, Westmount; aged 79; died, March 9.

James Henry Cook, Quincy, Mass.; Tufts College Medical School, Boston, 1910; member of the Massachusetts Medical Society; fellow of the American College of Surgeons; served during World War I; on the staff of the Quincy City Hospital; aged 58; died in March at East Hampstead, N. H., of heart disease.

George Romain Stalter, Knoxville, Iowa; University of Buffalo School of Medicine, 1912; member of the American Psychiatric Association; served during World War I; for many years associated with the Veterans Administration; manager of the Veterans Administration Facility; aged 52; died in March.

Ernest Albert Jenkinson, Sioux City, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the Iowa State Medical Society; fellow of the American College of Surgeons; on the staff of St. Vincent's Hospital; aged 70; died, March 17.

David Solomon Grim ✠ Millbach, Pa.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; past president of the Berks County Medical Society; served during World War I; aged 69; for many years on the staff of St. Joseph's Hospital, Reading, where he died, March 10.

Abram F. Lumpkin, Amarillo, Texas; University of Texas School of Medicine, Galveston, 1896; member of the State Medical Association of Texas; fellow of the American College of Surgeons; on the staffs of St. Anthony's Hospital and the Northwest Texas Hospital; aged 67; died, March 16.

Elliott Washburn, Brooklyn; Harvard Medical School, Boston, 1892; formerly chairman of the Taunton (Mass.) board of health; at one time on the staff of the Morton Hospital, Taunton; formerly superintendent of the Rutland (Mass.) State Hospital; aged 72; died, February 17.

John S. Hart, Toronto, Ont., Canada; Victoria University Medical Department, Coburg, 1888; University of Toronto Faculty of Medicine, 1889; for many years on the staffs of the Toronto Hospital for Incurables and the Toronto Western Hospital; aged 81; died, March 30.

Cicero Jackson Connor ✠ Corpus Christi, Texas; Fort Worth School of Medicine, Medical Department of Texas

Christian University, Fort Worth, 1917; aged 46; died in March at the Brackenridge Hospital, Austin, of injuries received in an airplane accident.

Oscar Wilhelm Tulisalo, Atlanta, Ga.; Rush Medical College, Chicago, 1917; member of the Medical Association of Georgia; served during World War I; aged 49; on the staff of the Georgia Baptist Hospital, where he died, March 14, of acute hepatitis.

Charles Ryan ✠ Des Moines, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1909; fellow of the American College of Surgeons; attending surgeon, Iowa Lutheran Hospital; aged 69; died, March 8.

Thomas Jefferson Halsey ✠ Butler, Mo.; University of Nashville (Tenn.) Medical Department, 1893; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; past president of the Bates County Medical Society; aged 74; died, February 26.

James Augustus McCloskey ✠ Major, M. C., U. S. Army, San Antonio, Texas; St. Louis University School of Medicine, 1933; became a first lieutenant in the medical reserve corps of the U. S. Army June 6, 1933 and was on active duty from Jan. 22, 1935 to Jan. 29, 1936; was commissioned a first lieutenant in the medical corps of the U. S. Army Jan. 30, 1936, a captain Jan. 22, 1938 and major Dec. 29, 1941; aged 32; was killed in action in the Philippine Islands, March 26.

KILLED IN ACTION

JAMES A. MCCLOSKEY, MAJOR, M. C., U. S. ARMY, 1909-1942

Richard Crawford Haynes, Wedowee, Ala.; Chattanooga (Tenn.) Medical College, 1906; member of the Medical Association of the State of Alabama; aged 64; died, March 21, in the Knight Sanatorium, Roanoke, of a penetrating bullet wound of the chest.

Franklin Sheldon Ruttan, Woodstock, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1893; served with the Royal Canadian Army Medical Corps during World War I; medical officer of health of Woodstock; died, January 12.

Morris Wayne Bottorf ✠ Kalispell, Mont.; Hahnemann Medical College and Hospital, Chicago, 1895; past president of the Flathead County Medical Society; on the staff of the Kalispell General Hospital; aged 70; died, March 16, of heart disease.

Garrett Mack Van Ausdall, New London, Iowa; Medical College of Indiana, Indianapolis, 1884; member of the Iowa State Medical Society; bank president; past president of the Henry County Medical Society; aged 83; died, February 27.

Edward F. Mikeska ✠ Taylor, Texas; University of Texas School of Medicine, Galveston, 1910; medical director of Dr. Floeckinger's Sanitarium; on the staff of the Stromberg Clinic and Hospital; aged 56; died, March 26, of coronary occlusion.

Herman Burgess Cole, Redwood Falls, Minn.; University of Buffalo School of Medicine, 1896; member of the Minnesota State Medical Association; aged 70; died, March 29, of diabetes mellitus, cerebral hemorrhage and arteriosclerosis.

Harry M. Greenwald ✠ Brooklyn; University and Bellevue Hospital Medical College, New York, 1910; member of the American Academy of Pediatrics; on the staff of the Israel-Zion Hospital; aged 51; died, March 13, of hypertension.

Albertus Adair Moore ✠ New York; University of the South Medical Department, Sewanee, Tenn., 1895; Medical College of the State of South Carolina, Charleston, 1896; served during World War I; aged 67; died, March 23.

Robert Bailey, St. Clair Shores, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1911; member of the Michigan State Medical Society; veteran of the Spanish-American War; aged 72; died in March.

Orren William Wyatt ✠ Manning, Iowa; University of Nebraska College of Medicine, Omaha, 1909; past president of the Carroll County Medical Society; medical director of the Wyatt Memorial Hospital; aged 61; died, February 3.

Fred Norton Blanchard, Detroit; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; served during World War I; aged 63; on the staff of the Harper Hospital, where he died, March 3.

John Thomas Stringer ✠ Medical Inspector, Commander, U. S. Navy; University of Maryland School of Medicine, Baltimore, 1915; was commissioned in the navy Dec. 29, 1917; aged 54; died, March 6, in Baltimore.

Caroline Jane Young High, Woodside, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; aged 77; died, March 10, in the James W. Sheldon Memorial Hospital, Albion, Mich.

John Harvey Hudson, Vanceboro, N. C.; College of Physicians and Surgeons, Baltimore, 1907; aged 64; died in March at St. Luke's Hospital, New Bern, of injuries received when he was struck by an automobile.

William Elbert Cravens, Lubbock, Texas; Kentucky School of Medicine, Louisville, 1892; member of the State Medical Association of Texas; on the staff of the West Texas Hospital; aged 71; died, March 18.

George A. Bell, Los Angeles; Saginaw (Mich.) Valley Medical College, 1903; formerly coroner of Saginaw County, Mich., and Saginaw County physician; aged 66; died, April 15, of carcinoma of the intestine.

Walter Clay Dickey, Memphis, Texas; University of Texas School of Medicine, Galveston, 1906; for many years bank president; aged 59; died, March 6, in the Baylor University Hospital, Dallas.

John F. Cooke, Smiths Grove, Ky.; University of Louisville (Ky.) Medical Department, 1888; for many years bank president; formerly member of the county board of education; aged 77; died, March 29.

Joseph Gauvreau, Montreal, Que., Canada; Laval University Faculty of Medicine, Quebec, 1898; formerly registrar, College of Physicians and Surgeons of the Province of Quebec; aged 71; died in March.

George S. Deibert, Wescosville, Pa.; Temple University School of Medicine, Philadelphia, 1910; served during World War I; aged 65; died, March 23, in the U. S. Naval Hospital, Philadelphia.

James E. Douglass, Tarpon Springs, Fla.; College of Physicians and Surgeons, Baltimore, 1873; formerly mayor; aged 90; died, March 1, of chronic myocarditis and valvular heart disease.

G. D. Dorough, Quitman, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 76; died, March 16, of acute dilatation of the heart and chronic nephritis.

Robert Dickson Ferguson, Pilot Mound, Man., Canada; Manitoba Medical College, 1897; served during World War I; formerly mayor and medical health officer; aged 75; died, March 2.

Harry Evans Pelle, Louisville, Ky.; Hospital College of Medicine, Louisville, 1877; member of the Kentucky State Medical Association; aged 86; died, March 4, of myocardial failure.

B. Wade Baker, Grafton, Ohio; Homeopathic Hospital College, Cleveland, 1882; aged 85; died, February 23, of carcinoma of the prostate.

Alfred P. Gray, Philadelphia; Jefferson Medical College of Philadelphia, 1896; aged 70; died, March 27, of a self-inflicted bullet wound.

Lewis De Moss Wolfe, Columbus, Ohio; Ohio Medical University, Columbus, 1902; aged 66; died, February 4.

George Fierheller, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1884; aged 81; died, February 8.

Albert M. West, Spirit Lake Iowa; Chicago Homeopathic Medical College, 1904; aged 82; died, January 15.

Frank C. Britton, Greeneville, Tenn.; Chattanooga Medical College, 1893; aged 76; died, February 7.

Bureau of Investigation

DIAPLEX DUPED DIABETICS

Frederick Dugdale, M.D., Meets Expert Witnesses for the U. S. Post Office

For some years "Diaplex," an alleged diabetes cure, was sold through the mails from Denver by the Diaplex Laboratories and from Portland, Maine, by Frederick Dugdale, M.D., who was known as "Chief Medical Advisor" [sic] of the Denver concern. Dugdale obtained a diploma in 1903 from the Baltimore Medical College and licenses to practice in Massachusetts and Maine.

Dugdale's Massachusetts license was revoked in 1929 for "gross misconduct in the practice of his profession." It was reported that this action was based on the charge that he had treated a woman in the last stages of cancer with the nostrum put out for that condition by William F. Koch of Detroit and virtually promised that it would cure her. When the Lowell, Mass., *Sun* published a considerable article on this case, Dugdale sued that paper for libel and demanded $50,000 damages. After hearing the evidence the jury in less than two hours brought in a verdict in favor of the *Sun*.

In the same field Dugdale was said to have been interested in the "Hoxide" cancer fakery and also to have put out a "cancer cure" of his own, known as "The Dugdale Treatment for Malignant Growths," as well as a "rheumatism cure," besides advertising himself as a "Boston Specialist" in "skin, blood and nervous diseases." In addition, he was at times associated with such "twilight zone" organizations—to which so many quacks and faddists have belonged—as the "Allied Medical Associations of America," the "Medical Society of the United States" and the "American Association for Medico-Physical Research." The latter was an outgrowth of the "American Association for Spondylotherapy," organized by the outstanding quack of the century, Albert Abrams, of whom Dugdale was a disciple. All of this serves as excellent background for the promotion of a "cure" for diabetes.

After an investigation, the Post Office Department on Oct. 19, 1940 ordered the Diaplex Laboratories and its general sales manager, H. W. Pierce, both of Denver, and Frederick Dugdale as "Chief Medical Advisor" to show cause on November 26 of that year why a fraud order should not be issued to debar them and their "treatment" from the mails because of what the Post Office charged were false and fraudulent pretenses, representations and promises. Among these were that Diaplex would permanently cure diabetes regardless of the age of the user or the severity of the case; would enable the user to discontinue taking insulin; would clear the urine of sugar and result in "a gradual, lasting building-up of the body glucose tolerance"; would, through its "mineral and vitamin content," restore the islands of Langerhans so that they would secrete a normal supply of insulin, and that all users of Diaplex would obtain results identical with or similar to those described in the alleged testimonials in the literature.

After two postponements requested by the defendants' attorney, the hearing was held on December 13. A government chemist testified that his analysis of Diaplex had shown it to be a mixture of sodium, potassium, calcium, chloride, sulfate, phosphate and traces of iron, manganese, aluminum, silica and iodine. Apparently these chemicals were found in the ash of saltbush, the plant from which, Pierce testified, his nostrum was made and which government chemists confirmed in another examination. Also appearing for the government was Dr. Maurice Protas of Washington, D. C., who specializes in the treatment of diabetes and lectures on that disease at George Washington University School of Medicine. He testified that diabetes mellitus is a metabolic disease in which the pancreas is involved, wherein there is a definite lack of insulin due to failure of the islands of Langerhans to produce the insulin hormone which is vital to the blood. He further stated that diabetes may be caused, among other things, by any malignancy which attacks the tissues and spreads to the pancreas, with the result that the insulin secreting cells may be destroyed. He showed that in the severe types of diabetes the patient must be given insulin injections, dietary restrictions and other individualized treatment, and that in milder cases the patient requires a restricted diet as to sugars and starches and sometimes needs insulin. Dr. Protas had tested Diaplex on three diabetic patients and found from careful clinical records that they made no progress whatever in six weeks—a period in which, he stated, a definite improvement would show, if ever. Dr. Protas offered further testimony which refuted the various claims and representations made for Diaplex.

Dr. Dugdale himself as one of the defendants was obliged to admit that some of the representations could not be scientifically substantiated. He further admitted that he had not made any physical examination whatever of the twenty-five or so persons whom he cited as diabetic who allegedly had been benefited by taking Diaplex, nor had he submitted them to laboratory tests.

The other defendant, H. W. Pierce of Denver, said to be sole owner of the Diaplex business, also was put on the witness stand. He testified that around 1906 a neighbor suggested the use of a certain herb for the treatment of Pierce's brother, an alleged diabetic, and that he, the witness, later identified the herb as saltbush and obtained it from some sheepmen. Although Pierce claimed that by the use of the saltbush his brother was cured of diabetes, he admitted that two physicians who had previously treated the patient had diagnosed his disease as dropsy. Pierce further contended that he knew of various persons whose diabetic condition had been helped by Diaplex, including himself, but he refused to submit to a scientific test to prove his freedom from the disease.

In 1930, according to Pierce, he began marketing the product, successively naming it "American Beauty Tea," "American Beauty Beverage" and "Diaplex." In spite of the "laboratory" part of his firm name he acknowledged that he did not maintain a laboratory and had no employees. Further testimony from him showed that, though he had read some books on diabetes, he had never found one in which saltbush was recommended for that condition. In fact, since neither defendant was able to present any evidence that saltbush was a cure for diabetes, their promotion of Diaplex was found to constitute a swindle on the public. Accordingly their business was debarred from the mails by a fraud order issued on March 27, 1941 against the names Diaplex, Diaplex Laboratories, H. W. Pierce, Dr. Frederick Dugdale and their officers and agents. Two days later a separate fraud order was issued against Frederick Dugdale, who represented the eastern office of the Denver concern.

Previous mention has been made of the fact that Dugdale once was a disciple of the late Albert Abrams of "electronic reactions" notoriety. It is interesting to note that at the hearing of the case that the Post Office brought against him part of the government's evidence was a printed circular, "The Successful Treatment of Diabetes with Diaplex," which recommended the use of Diaplex in connection with "electronic" devices. And yet such contraptions originally were represented by their promoters as self sufficient for treatment of disease without the use of any drugs!

Between 1935 and 1940 another government agency, the Food and Drug Administration, seized consignments of Diaplex in interstate commerce in at least 9 cases on record, on the ground that the labels bore fraudulent representations. In 6 of these cases no one put up a defense or claimed the property, and the court ordered it confiscated. In 1 instance an Idaho consignee, having consented to the entry of a decree of condemnation, was permitted to claim the consignment by promising under bond that it would be relabeled in compliance with the law. In the 2 remaining instances, which involved shipments of Diaplex from Denver to California and Idaho and cited H. W. Pierce and W. J. Predmore of Denver as defendants, the cases were tried together before a jury. Here it is worth reprinting a Current Comment which appeared in THE JOURNAL, July 4, 1936, page 42, under the heading "Doctors and Diaplex":

"In a recent trial the federal government was defeated in its attempt to prove one Horace Wayne Pierce, manufacturer and shipper of a herb tea called 'Diaplex,' guilty of fraud under the criminal clause of the Food and Drugs Act. Diaplex, the dried leaves and stems of Atriplex canascens (saltbush), is offered as a specific for diabetes. The advertising exaggerates

the dangers of insulin and dwells on the simplicity of taking Diaplex. The government lost its case principally because of the premature enthusiasm of a physician for the nostrum. As told in a brief summary of the case issued by the United States Department of Agriculture, the government contended that the falsity of the claims made for Diaplex as a remedy for treating diabetes was fully proved. The breakdown in the government testimony came when two witnesses—one a doctor and the other a layman—admitted the writing of complimentary and optimistic letters to the manufacturer. Both these witnesses testified nevertheless that they had been misled, as the herb tea turned out to be worthless in their later experience. At the trial Pierce claimed that he depended on these letters as expressions of opinion from persons competent to judge the effects of his treatment. In the face of this testimony, the jury was not convinced of the fraudulent intent, which, under the law, must be shown in all criminal cases involving curative claims for medicines. The testimony of physicians called by the government that Diaplex could not affect the course of diabetes was entirely nullified by the careless endorsement of one physician. Endorsements given by physicians to 'patent medicine' venders, either carelessly or wilfully, are invariably distorted into bait for the uncritical patient as a means of luring him away from proved methods of treatment. The case of Diaplex should serve as a warning to the physician against haste in judgment of therapeutic results. The difficulty of evaluating remedies for arthritis, diabetes, nephritis, hypertension and similar chronic conditions should be realized. The lack of suitable controls is apparent in all these hasty enthusiasms which lead doctors into writing or voicing commendation before time has truly tested the results. Then, like the ghost in Hamlet, their testimonials come back in after years to haunt them."

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some fraud orders not dealt with previously:

Adams Products Company.—From Adams, N. Y., and Montreal, Canada, a Frederick Godfrey sold a hair treatment under the "Renair" name and sometimes operated as the Frederick Godfrey Company. Some of his advertising described him as "a hair specialist famous in England, Australia, and New Zealand, and now in Canada," and again he called himself "a young English research worker in hair and scalp conditions" and claimed that "sworn statements and actual photographs clearly prove the success of his process." His advertising was directed toward "people wholly or partially bald or whose hair is thinning rapidly." Finally the Post Office looked into his activities and charged that he was falsely and fraudulently representing that his "Renair Process" which included "Renair Hair Lotion," "Renair Lotion No. 2" and "Renair Pomade" and instructions concerning massage would, when used as directed, stop hair from falling and prevent baldness in all cases except those due to the "atrophy of old age" and produce numerous other results. According to the Post Office memorandum on this case Godfrey had operated under his personal name and that of the Frederick Godfrey Company up to Sept. 30, 1939, on which date the Post Office had called on him to show cause why a fraud order should not be issued against his name and that of the Frederick Godfrey Company for perpetrating a fraud on the public through the mails. On December 30 Godfrey filed an affidavit with the Post Office in which he promised to abandon the business and agreed that the postmaster at Adams, N. Y., should be directed to return to senders all mail addressed to Godfrey or his concern and mark it "Out of Business" or otherwise to dispose of it according to the postal regulations. Subsequent investigation by the Post Office, however, revealed that Godfrey did not actually go out of business but continued his operations after adopting a new name, the Adams Products Company, and under this trade style circularized former customers, telling them in effect that the formulas and rights for the Renair Process had been procured by the new company from Frederick Godfrey and that future orders and remittances should be addressed to the new name. As this ruse was a transparent one the Post Office on Jan. 30, 1941 ordered the Adams Products Company to show cause on February 17 why a fraud order should not be issued against it. After a continuance had been granted the defendant, he finally appeared with one of his attorneys at the hearing set for March 3. The only explanation that he offered for the continuance of the business under a new name was that an attorney he had previously employed had advised him that this action would not violate the terms of the affidavit that he had signed promising to go out of business. He further testified that he had revised his circular matter and believed that he had removed therefrom all objectionable statements. There also appeared at the hearing three witnesses for the government, including two physicians who specialize in dermatology and a chemist connected with the Food and Drug Administration. The latter testified that he had found the Renair Hair Lotion to contain 0.017 Gm. of sulfuric acid and 0.21 grain of quinine sulfate in each 100 cc. The Hair Lotion No. 2, he testified, contained 58 per cent of alcohol, 1.1 grains of resorcinol and a small amount of capsicum in each 100 cc. In the Pomade he found 2.9 per cent of betanaphthol and 2 per cent of a volatile oil resembling cedar leaf oil. The two dermatologists who appeared as government witnesses testified that Renair Pomade, when applied to the scalp as directed, would have a fairly strong counterirritant and mildly antiseptic action and that the Hair Lotion No. 2 would be mildly antipruritic, antiseptic and irritant. Their further testimony, however, showed that these products would have practically no effect on falling hair and baldness. It was also shown at the hearing that Godfrey had requested that he again be permitted to file an affidavit agreeing to discontinue this business on the ground that he had never intended to violate the provisions of the previous affidavit. As this, however, was exactly what he had done, the Post Office did not consider it expedient to grant his second request and on May 6, 1941 issued a fraud order against the Adams Products Company and its officers and agents.

R. F. Vestvold.—Under this assumed name one Rolf Frank Kristiansen of Haverford, Pa., promoted through the mails three devices known as "The Photo-Electric Dilator," "The Flexible G. U. Heater," and "The Adjustable Intermitter." For the "dilator" he claimed that it was in use by over 6,000 physicians throughout the world and could be employed by any one, physician or layman, "to ameliorate the ravages of Prostate Gland Trouble, Piles, Pruitis [sic] Ani and Constipation, etc. Luminous Infrared rays does it. $3.75 Postpaid." Inquirers received a mimeographed circular containing testimonials alleged to have been written by physicians in various parts of the country and abroad. The mechanism consisted of a large rectal dilator connected to an electrical cord with an electric socket attached for the insertion of a light globe. The dilator itself consisted of a glass tube about four inches long and three-quarters of an inch in diameter. A scientific test made of the maximum temperature reached by the instrument when used according to the directions showed 104 degrees Fahrenheit. At the hearing of this case an expert medical witness testified for the government that hemorrhoids, enlarged prostate, pelvic abscesses, cystitis, gonorrhea and some kindred disorders are all due to different causes which should be treated accordingly, and hence devices such as the Photo-Electric Dilator would give little if any relief in general. The Adjustable Intermitter was shown to consist of an electrical intermitter which, when "connected to the house current along with the dilator" would result in the intermittent flow of current to the latter. According to the expert medical testimony, the combination of these devices would not afford effective passive massage action in the treatment of prostatic conditions as represented, beyond the interruption of the steady flow of current and the resultant heat produced thereby. The Flexible G. U. Heater, according to the Post Office memorandum, was found to consist of a rubber catheter about two feet long containing a metal heating element. It was to be connected to the regular house current by means of an electric plug and switch. Scientific tests made of this device disclosed that when used according to directions it would reach a maximum temperature of 107.6 degrees Fahrenheit within five minutes after the current was turned on. It was represented as a cure for such conditions as urethritis, strictures, urine retention, gonorrheal infections and kindred disorders. The expert medical witness testified that there is no known single curative agent for any of these ailments but that the employment of this device might in some instances offer minor temporary relief. Nothing more could be expected of it and, in fact, its use might prove dangerous in the hands of a layman. It was further shown that Kristiansen (Vestvold) was not a physician but a plumber by trade. Subsequent to the hearing he offered to revise his advertising literature to remove any objectionable claims, but as the Post Office found from the evidence that his scheme constituted a swindle on the public through the mails a fraud order was issued on April 26, 1941 against the name of R. F. Vestvold.

W. C. Foster.—This person conducted a mail order business from a postoffice box in Santa Monica, Calif., describing himself as "president" of his unnamed firm and also as "Distributor of Private Pharmaceutical Formula." He put out "O. A. Capsules," which he puffed as "The Newest and Greatest Contribution Medical Science Has to Offer," but there followed the simple dénouement that it consisted of acidophilus yeast! A chemist and a microanalyst who examined the product for the government, however, reported that a positive test made for the presence of yeast cells in O. A. Capsules failed to detect any of this substance although the label declared that they consisted of acidolphilus yeast and ovarian and prostatic extracts. They did report finding in each capsule crystalline milk sugar, alfalfa leaf tissues, granular animal tissues, corn starch and rice bran. This mixture was represented to enable the user to "attain and retain a strong, healthy sexual system" regardless of his age or physical condition, and to "rebuild and revitalize the parts of the glandular system which are necessary for smooth, powerful, active sexual system," with "almost instant results." At the hearing of the case these claims were refuted by the physician who testified for the government that sexual debility is due to many causes associated with various systemic diseases and conditions, such as tuberculosis, cancer, venereal disorders, anemia and certain injuries to the sexual structure and that sexual impotence may also result from such factors as psychic conditions, emotional changes, senility and financial and family worries. Hence every case of sexual debility would have to be studied as to its causes and treated accordingly. This witness further showed that the product in question would not and could not cause "every" person to "attain and retain a strong, healthy sexual system" and that it contained nothing which would overcome any or all of the various factors causing sexual debility. Other evidence was presented to show that neither Mr. Foster nor any one else associated with the business had any medical training and that, in fact, Foster formerly had been employed as a steel worker. Foster put up no defense and on Sept. 17, 1941 the Post Office issued a fraud order debarring him and his business from the mails.

Correspondence

WARNING ON USE OF PHENOL-CAMPHOR IN CASES OF "ATHLETE'S FOOT"

To the Editor:—I was pleased to note in the current issue of The Journal your comments on phenol-camphor for "athlete's foot," especially since it warns again that the phenol-camphor preparation should not be applied to the wet skin. Our previous experience with phenol-camphor mixtures caused us to be a little bit dubious about the clinical note which appeared in The Journal of Dec. 6, 1941, but we did not immediately begin any investigations of these preparations and, as a matter of fact, did not perform any experiments until a case came to our attention which resulted from the appearance of an item in *Science Supplement* of Dec. 19, 1941. In the item in *Science Supplement* it states: "The remedy consists of a mixture of three parts phenol and one part camphor which can be prepared by any pharmacist." The injury which came to our attention, as I said, was the result of a person's noting this item and having a pharmacist prepare such a preparation and subsequently using it. The material was applied to a fairly large area on the leg near the ankle. A necrotic area developed which required several weeks to heal. This was the situation we feared when we read the rather peculiar combination of sentences in the second paragraph of the clinical note which appeared in The Journal. The last sentence of this paragraph states, as you will recall, "Experiments indicate that the ingredients may be mixed in the proportion of 3 parts phenol and 1 part camphor," which is followed by a paragraph, the first sentence of which states: "The mixture is nonirritating to the skin and may be painted between the toes several times a day."

Soon after this case came to our attention we began some experiments, using rabbits as the test animal, since it is quite well recognized that rabbit skin responds very much the same as that of human skin to many types of preparations. Our experiments were finished a few days ago and we had just been debating the best possible manner of presenting this information to the public in order to prevent further serious injuries when we noticed the editorial comment in The Journal. Since you have stated in it that a number of investigations are now being conducted to determine the extent of the causticity of the phenol-camphor mixture and its possible benefits and dangers, we thought you might be interested in the results of our investigations. Briefly summarized, they are as follows:

1. Three preparations were prepared, namely a National Formulary VI preparation composed of 6 parts of camphor, 3 parts of phenol and 1 part of liquid petrolatum.
2. A 1 to 1 mixture of camphor and phenol without petrolatum.
3. One part of camphor plus 3 parts of phenol without petrolatum.

These preparations were each applied to a clipped area of skin of the rabbit and in each instance the National Formulary preparation was used on one area while one of the other two preparations was used on a different area of the same animal. The applications were made twice a day and the largest number of total applications was seven for any one of the three preparations. In order to simulate the sock and the shoe, we used dry gauze covered by adhesive tape to cover the areas. In the case of the National Formulary preparation applied to dry areas, there was only very slight irritation and very slight erythema, if one could consider it positive at all. With the 1 to 1 preparation the irritation and erythema were also slight but definitely more noticeable than with the National Formulary preparation. When the same two preparations were used on areas that had been moistened to such an extent as to resemble mild perspiration, the effects were definitely more noticeable, even in the case of the National Formulary preparation, and in that of the 1 to 1 mixture after the second application the area was discolored black and after the fourth application there was a severe burn with a necrotic eschar. When the mixture of 1 part camphor and 3 parts phenol was applied to the dry skin, there was a severe burn even after the first and particularly after the second application, followed by a necrotic eschar. When the area was wetted prior to application of the mixture of 1 part camphor and 3 parts phenol, a condition arose similar to that when it was applied to the dry skin but even more severe.

We feel that further emphasis should be given by some means to the injuries that may result from the caustic nature of this type of preparation, particularly the one containing 3 parts phenol and 1 part camphor. A further warning would be advisable by The Journal, and I feel that warning notes should also be published in those journals which have reprinted this information, particularly *Science, Readers' Digest* and some of the drug trade journals. I shall call this to their attention by sending them copies of this letter.

Herbert O. Calvery, Ph.D.
Chief, Division of Pharmacology,
Food and Drug Administration,
Washington, D. C.

DOES DIABETES PREDISPOSE TO PYOGENIC SKIN INFECTIONS?

To the Editor:—In the article by J. R. Williams "Does Diabetes Mellitus Predispose the Patient to the Pyogenic Skin Infections?" (The Journal, April 18, p. 1357) the author concludes that pyogenic skin infections occur no more frequently in diabetic than in nondiabetic persons, but the statistics presented by him do not bear out his point. In one of the hospitals studied by him 330 diabetic patients were admitted during the years 1938, 1939 and 1940. Eight of these had boils or carbuncles, which gives a percentage of 2.4. During this same period there were 26,879 nondiabetic admissions, among which there were 166 boils or carbuncles. This gives an incidence of 0.6 per cent. In other words, according to the author's own figures boils or carbuncles were four times as common among diabetic as among nondiabetic patients. In the other hospital studied, one is unable to make this calculation because the number of patients with diabetes is not given. Similarly, in his study of 2,130 office patients the author does not state how many diabetic patients were in the group. Before concluding that there is no relationship between diabetes and pyogenic infections of the skin, one would have to study a series of patients in whom the disease was not under control, and since the advent of insulin such a series would be difficult to obtain. Whenever I see a boil or a carbuncle I make it a point to test the urine for sugar, and it is my impression that diabetes is found a little more frequently in these patients than in others. I agree with Dr. Williams that if the disease is being treated the diabetic patient is not in much danger from boils or carbuncles, but I still believe that he is in a little more danger than a normal person.

Frederick C. Hill, M.D., Omaha.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, May 16, page 288.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Acting Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, June 4-5. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 4-5. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* San Francisco, June 29-July 2. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, June 17. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: * Denver, July 7-10. Application must be on file not later than June 21. Sec., Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: * *Medical,* Hartford, July 14-15. *Endorsement.* Hartford, July 28. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, July 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, July 13-16. Sec., Dr. James A. Morgan, 55 Young Bldg., Honolulu.

ILLINOIS: Chicago, June 23-25. Superintendent of Registration, Mr. Philip M. Harman, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, June 2-3. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, May 27-29. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Augusta, July 7-8. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, June 9-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 16-17. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 14-17. Sec., Dr. H. Q. Gallupe, 413-F State House, Boston.

MICHIGAN: * Ann Arbor and Detroit, June 3-5. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, June 16-18. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, June 24-25. Assistant Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, June 4-6. Sec., Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

NEBRASKA: * Omaha, June 8-10. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW HAMPSHIRE: Concord, Sept. 10-11. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, June 16-17. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 22-25. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 15. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 7-10. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Written.* Columbus, June 16-17. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Oklahoma City, June 3-4. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: * Portland, July 22-24. Application must be on file not later than July 9. Exec. Sec., Miss Lorienne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July. Act. Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, July 2-3. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia: June 22-24. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: * Pierre, July 21-22. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TENNESSEE: Knoxville, Memphis and Nashville, June 17-20. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Dallas, June 4-6. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas.

UTAH: Salt Lake City, June 29-30. Assistant Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, June 16-18. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, June 17-20. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WEST VIRGINIA: Charleston, July 6-8. Commissioner, Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WISCONSIN: * Milwaukee, June 30-July 3. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, June 1-2. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, June 16. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

CONNECTICUT: June 13. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

MICHIGAN: Ann Arbor and Detroit, June 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

NEBRASKA: Omaha, June 8-10. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Springer, June 12. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OREGON: Corvallis, July 11. Application must be on file not later than June 24. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH DAKOTA: Vermillion, June 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Milwaukee, June 6. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Liability for Prenatal Injuries to Infants.—In 2 cases decided within a month of each other the courts of Pennsylvania and New Jersey passed on the question of whether or not an infant could recover damages for injuries sustained prior to its birth. Opposite conclusions were reached.

In the first case, decided by the Supreme Court of Pennsylvania, no facts were stated in the decision. The court merely said that the question had never before been presented to an appellate court in Pennsylvania, cited four decisions from other jurisdictions denying a right of recovery to the infant and concluded that there was no warrant for holding, independent of statute, that a cause of action for prenatal injuries to a child accrues at birth. The Supreme Court of Pennsylvania admitted, however, that "it is true that the unity of mother and child has been relaxed in modern times and that today for some beneficial purposes a child en ventre sa mere is considered as born."

In the New Jersey case the circuit court of Middlesex County exhaustively discussed the principles of law involved and cited many cases that have been decided on the subject. The real plaintiff in the case was a 5 year old boy. He filed suit, by his next friend, for damages, alleging that, prior to his birth, his mother had gone to the defendant physician for medical attention and, because of the physician's negligence in diagnosis and the administration of roentgen treatments, the plaintiff was born a microcephalic and an idiot, without skeletal structure, sight, speech, hearing or the power of locomotion. The defendant filed a motion to dismiss the plaintiff's complaint on the ground that an infant had no right to maintain an action for injuries sustained while en ventre sa mere.

The court said that the law has long recognized that, for all purposes beneficial to the infant after birth, a child en ventre sa mere is to be considered as born and that a right of action to recover for prenatal injuries is certainly for the child's benefit. The perfect answer and unanswerable argument, the court said, in the determination of the issue here presented, a problem in the law of torts, is the application of the criminal law in offenses committed against an infant en ventre sa mere. Assault and battery is an integral part of murder. Murder by force cannot be committed without there being an assault and battery. If it is an offense under the criminal law to assault and batter a child en ventre sa mere, that crime ripening into murder if the child is born alive and later dies as the result of its prenatal injuries, it in all justice and logic must be said that the child has a right of action after its birth for prenatal injuries inflicted on it by the wrongdoer. Assuming as it must be assumed, the court continued, that an indictment for assault and battery would lie, certainly a right of action sounding in damages for the tort should be allowed. While it is true that the majority of the decided cases are against the right of recovery for an alleged tort committed against a child yet unborn, the court pointedly remarked that in its opinion the weight of authority holds for the recovery. The well-being and health of our children are of at least as much importance and in need of care and the protection of the courts as are their rights in property or under the criminal laws. The law, the court said, cannot to survive be stagnant. It cannot be a dead thing. It must be alive. It must progress as civilization progresses. It must keep abreast of the other arts and sciences in order to justify its existence.

The court concluded, therefore, that where as here the defendant is a physician and knows or should know of the existence of a child en ventre sa mere, he owes a duty to that child. If that duty is disregarded and through his negligence the child is injured while the mother is quick, if it is born viable, an action should lie on behalf of the child for the injuries sustained by it and for any consequential damages resulting therefrom to its parents. The motion to dismiss was therefore disallowed.—*Berlin v. J. C. Penney Co., Inc., 16 A. (2d) 28 (Pa., 1940); Stemmer v. Kline, 17 A. (2d) 58 (N. J., 1940).*

Malpractice: Failure to Cure Not Actionable.—In January 1938, the plaintiff fractured both bones in his right leg between the knee and the ankle and was taken to a clinic operated by the defendant physician. The defendant set the broken bones, placed the plaintiff's leg in a cast and put the plaintiff in bed, where he remained for forty-seven days. In the early part of February, the plaintiff and the defendant entered into a contract whereby the defendant agreed, for the sum of $750, to furnish the plaintiff all necessary medical attention and hospitalization through March 4, 1938, the contract covering, too, the services already rendered by the defendant. About four weeks after the accident, the first cast was removed. It was found that the plaintiff's leg was bent and his foot twisted and that there was a "sink-hole" where the leg had been broken, but the defendant advised the plaintiff that the "sink-hole" was due to lack of circulation caused by the cast and that it would get all right after the cast had been permanently removed. He then straightened out the foot and applied a second cast. A number of roentgenograms were taken by the defendant from time to time. The plaintiff left the clinic on March 3 but continued to return for treatment, and eventually a third cast was put on. His condition gradually improved to a point where he was able to go about on crutches, but while attending a baseball game some one struck his toe and reinjured his leg.

In July, the plaintiff went to a government hospital in Lexington, Ky., where he stayed for five days. Additional roentgenograms of his leg were there taken and an operation was advised, but the plaintiff refused his consent. He returned home and renewed his visits to the defendant. Some time in January 1939 the plaintiff suggested to the defendant that he would like to have some other surgeon operate on his leg. The defendant therefore sent the plaintiff to a recognized bone specialist and offered to pay any necessary hospital or medical fees, but proper arrangements could not be made. Finally, in April 1939 the plaintiff entered the Veterans' Hospital at Memphis and had a second operation performed. He remained there for fifty-nine days and then moved to the Veterans' Hospital at Johnson City, where he was at the time of the trial. The physicians in the latter institution refused to operate again but attempted to cure a disease condition of the bones in the plaintiff's leg by heat and electric treatments. In a subsequent suit against the defendant for malpractice, the only evidence consisted of the testimony of the plaintiff and his sister. Not one of the roentgenograms which had been taken was introduced in evidence nor were any of the physicians who had seen and treated the plaintiff called as witnesses. At the close of the plaintiff's case the trial court entered judgment for the defendant on a directed verdict, and the plaintiff appealed to the court of appeals of Tennessee, middle section.

In the opinion of the appellate court, the trial court did not err in directing a verdict for the defendant, for there was no evidence of any negligence on the part of the defendant. The utmost effect of the evidence was merely that the leg had failed to recover; that neither the defendant nor any of the other physicians had been able to cure it. A physician is not liable for a mere failure to cure, the court pointed out. He is liable only for failure to use that degree of care and learning which is ordinarily used under similar circumstances by members in good standing in his profession. The evidence afforded no explanation why the leg would not heal or why the bone was diseased. Since this might have been due to causes other than the lack of proper treatment, the court concluded that the doctrine of res ipsa loquitur was inapplicable.

The plaintiff also contended that the case should have been submitted to the jury on the question of breach of the contract to furnish medical attention and hospitalization. The court held, however, that the contract, by its terms, extended only through March 4, 1938. The defendant, nevertheless, continued to treat the plaintiff until January 1939 and even offered to pay the fee for a bone specialist to treat the plaintiff's leg. The court held that the contract had not been breached. Judgment for the defendant was accordingly affirmed.—*Merryman v. Bunch, 145 S. W. (2d) 559 (Tenn., 1940).*

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, N. J., June 8-12. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

American Association for the Study of Allergy, Atlantic City, N. J., June 8-9. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.

American Association for the Surgery of Trauma, Boston, June 4-6. Dr. Gordon M. Morrison, 520 Commonwealth Ave., Boston, Secretary.

American Association of Genito-Urinary Surgeons, Hershey, Pa., May 27-29. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association of Oral and Plastic Surgeons, New York, May 28-30. Dr. Frederick A. Figi, 102 Second Avenue S.W., Rochester, Minn., Secretary.

American Broncho-Esophagological Association, Atlantic City, N. J., June 8-9. Dr. Paul H. Holinger, 700 North Michigan Blvd., Chicago, Secretary.

American College of Chest Physicians, Atlantic City, N. J., June 6-8. Dr. Paul H. Holinger, 500 North Dearborn St., Chicago, Secretary.

American Diabetes Association, Atlantic City, N. J., June 7. Dr. Cecil Striker, 630 Vine Street, Cincinnati, Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 8-9. Dr. J. Arnold Bargen, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Gynecological Society, Skytop, Pa., June 15-17. Dr. Howard C. Taylor Jr., 842 Park Ave., New York, Secretary.

American Heart Association, Atlantic City, N. J., June 5-6. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Human Serum Association, Atlantic City, N. J., June 8. Dr. William L. Wheeler, 348 West 22d St., New York, Secretary.

American Laryngological Association, Atlantic City, N. J., May 25-27. Dr. Charles J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, N. J., June 1-3. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, Atlantic City, N. J., June 6-7. Dr. Ada Chree Reid, 102 East 22d St., New York, Secretary.

American Neurological Association, Chicago, June 4-6. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 1-3. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Orthopedic Association, Baltimore, June 3-6. Dr. Charles W. Peabody, 474 Fisher Bldg., Detroit, Secretary.

American Otological Society, Atlantic City, N. J., May 28-29. Dr. Isidore Friesner, 101 East 73d St., New York, Secretary.

American Physiotherapy Association, Lake Geneva, Wis., June 28-July 3. Miss Evelyn Anderson, Stanford University, Calif., Secretary.

American Proctologic Society, Atlantic City, N. J., June 7. Dr. William H. Daniel, 1930 Wilshire Blvd., Los Angeles, Secretary.

American Radium Society, Atlantic City, N. J., June 8-9. Dr. Axel N. Arneson, 4952 Maryland Ave., St. Louis, Secretary.

American Rheumatism Association, Atlantic City, June 8. Dr. A. R. Shands, Dupont Institute, Wilmington, Del., Secretary.

American Society of Clinical Pathologists, Philadelphia, June 5-7. Dr. Alfred S. Giordano, 531 North Main St., South Bend, Ind., Secretary.

American Therapeutic Society, Atlantic City, N. J., June 5-6. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, New York, June 1-4. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Arizona State Medical Association, Prescott, May 25-30. Dr. W. Warner Watkins, 15 East Monroe St., Phoenix, Secretary.

Association for the Study of Internal Secretions, Atlantic City, N. J., June 8-9. Dr. Henry H. Turner, 1200 North Walker St., Oklahoma City, Secretary.

Connecticut State Medical Society, Middletown, June 3-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Maine Medical Association, Poland, June 21-23. Dr. Frederick R. Carter, 142 High Street, Portland, Secretary.

Massachusetts Medical Society, Boston, May 26-27. Dr. Michael A. Tighe, 8 Fenway, Boston, Secretary.

Minnesota State Medical Association, Duluth, June 29-July 1. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.

Montana, Medical Association of, Missoula, July 8-10. Dr. Thomas F. Walker, 206 Medical Arts Bldg., Great Falls, Secretary.

National Gastroenterological Association, New York, June 3-5. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.

New Mexico Medical Society, Santa Fe, June 25-28. Dr. L. B. Cohenour, 221 W. Central Avenue, Albuquerque, Secretary.

Pacific Northwest Medical Association, Portland, Ore., June 17-20. Dr. C. W. Countryman, 407 Riverside Ave., Spokane, Secretary.

Rhode Island Medical Society, Providence, June 3-4. Dr. William P. Buffum, 122 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Montclair, May 27. Dr. Walter B. Mount, 21 Plymouth Street, Montclair, Secretary.

West Virginia Medical Association, White Sulphur Springs, July 13-15. Mr. Charles Lively, 1031 Quarrier St., Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

9:49-86 (Feb.) 1942

*Gallbladder Dyspepsia. R. H. Moser, B. D. Rosenak and R. J. Hasterlik, Indianapolis.—p. 49.
Problem of Common Duct Stones: Further Experience with Instrument for Visualizing Interior of Common Duct at Operation. M. A. McIver, Cooperstown, N. Y.—p. 52.
Lipophagic Granulomatosis of Enteric Tract. S. Sailer and R. J. McGann, Cincinnati.—p. 55.
*Ileocolostomy with Exclusion for Nonspecific Ileitis. R. Colp, J. Garlock and L. Ginzburg, New York.—p. 64.
Clinical Study of Secretin Test. H. M. Pollard, Lila Miller and W. A. Brewer, Ann Arbor, Mich.—p. 68.
Functional Disturbance of Small Intestine in Chronic Idiopathic Ulcerative Colitis. K. A. Elsom, F. G. Dickey and F. W. Chornock, Philadelphia.—p. 74.
Movements of Pancreas. C. A. Beling, C. F. Baker and W. J. Marquis, Newark, N. J.—p. 76.
Atrophic Gastritis Successfully Treated with Liver-Stomach Concentrate: Case. R. U. Leser and R. J. Hasterlik, Indianapolis.—p. 78.
Halitosis, True and False. R. Drosd and B. B. Crohn, New York.—p. 79.
Effect of Acute Alcoholic Intoxication on Hepatic Function. J. M. Beazell, A. L. Berman, V. H. Hough and A. C. Ivy, Chicago.—p. 82.

Gallbladder Dyspepsia.—Moser and his co-workers analyzed the histories of 49 patients who returned to the clinic because of the persistence of dyspeptic symptoms following cholecystectomy for a calculous gallbladder. A comparison of preoperative and postoperative symptoms with the micropathologic study of the gallbladder showed no correlation between the degree of pathologic change and the expectancy of an operative cure. Among the patients having dyspepsia postoperatively many had severe cholecystitis with stones. This fact suggests that there is little or no relationship between the dyspepsia in disease of the gallbladder and the pathologic degree of cholecystitis. The symptoms of 33 patients were considered to be due to an irritable colon and of the others to food intolerance, diverticulitis of the colon, superficial gastritis, chronic pancreatitis, biliary dyskinesia and chronic inflammatory disease of the pelvis. There was nothing in the histories of the 49 patients to differentiate the dyspepsia from that originating from other sources. Only one observation seemed important: If the dyspepsia was associated only with the acute attack, then relief was likely to follow cholecystectomy. While it is not suggested that the diseased gallbladder with stones should not be removed, the patient should be informed of his chances for obtaining relief from dyspepsia. The true cause of the dyspepsia should be determined before operation and, if possible, measures should be instituted to correct it. The colic due to disease of the gallbladder is generally relieved by cholecystectomy; dyspepsia is not and should not in itself be an indication for cholecystectomy.

Ileocolostomy with Exclusion for Nonspecific Ileitis.—Colp and his associates report their experience with ileocolostomy with exclusion for the treatment of distal regional ileitis. Ileocolostomy with exclusion is an indirect, effective and simpler procedure than one stage ileocecal resection, which may be performed in the uncomplicated variety of the disease. Ileocolostomy obviates the necessity for widespread dissection with the possibility of injury to the adjacent and often densely adherent viscera. It avoids extensive raw areas as sites for further adhesions and possibly intestinal obstruction. The possibility of peritonitis from the accidental opening of an encapsulated purulent focus is also reduced. It can be carried out with a negligible mortality by the surgeon who only rarely encounters the disease. Among the authors' 40 patients there was no operative death and no serious postoperative complication. The validity of the objections against ileocolostomy with exclusion, that undesirable mechanical and physiologic conditions might supervene, that healing would fail to occur in the excluded diseased loop and that the continued presence of a primarily diseased segment of ileum would favor the extension of the pathologic process to proximal segments previously uninvolved, are not supported by the results in 40 cases. An overwhelming number of excluded segments of intestine undergo healing. New proximal disease was observed only once, and in that case there was a "skip area" of about 3 feet. In a parallel series of thirteen resections proximal extension was encountered three times. It appears that the deciding factor in the prevention of postoperative proximal disease is not what is done to the primarily diseased segment, but on resection or exclusion at a high enough level. When distal ileitis is complicated by proximal, localized or jejunal involvement it may be wiser to resect the proximal lesion, reestablish continuity at that point and exclude the distal segment. Also there are cases of jejunoileitis that are not to be treated by either method as sufficient small intestine would not be left to perform adequately the functions of digestion and absorption.

American J. Obstetrics and Gynecology, St. Louis

43:183-364 (Feb.) 1942

*Comparison of Thyroid Extract and Iodine Therapy in Prevention of Toxemia of Pregnancy. E. D. Colvin, R. A. Bartholomew and W. H. Grimes, Atlanta, Ga.—p. 183.
Granulosa and Theca Cell Tumors of Ovary: Report of Thirty Cases. D. N. Henderson, Toronto, Canada.—p. 194.
Malignancy of Ovaries. J. R. Goodall, Montreal, Canada.—p. 210.
Hysterectomy in Pregnancy, Labor and Puerperium. G. W. Gustafson, Indianapolis.—p. 221.
Study of 104 Cases of Uterine Fibroids Associated with Arterial Hypertension. W. O. Johnson, Louisville, Ky.—p. 231.
Pathology of Embryo and Abortion. A. K. Paine, Boston.—p. 245.
Endometriosis. W. R. Holmes, Atlanta, Ga.—p. 255.
Management and Outcome of Labor in 742 Women with Borderline Pelves. J. B. Jacobs, Washington, D. C.—p. 267.
Occiput Posterior—Normal Presentation. L. A. Calkins, Kansas City, Kan.—p. 277.
Transverse Plication of Rectum for Reduction of Large Rectoceles. W. T. Dannreuther, New York.—p. 286.
Midline Episiotomy. J. P. Pratt, C. P. Hodgkinson and C. R. Kennedy, Detroit.—p. 292.
*Treatment of Gonorrhea in Female with Sulfathiazole. D. R. Smith and R. Deakin, St. Louis.—p. 296.
Improved Method of Uterine Closure in High Classic Cesarean Section. M. G. Potter and N. W. Elton, Buffalo.—p. 303.
Gonadotropic Hormone Concentration in Emesis Gravidarum. F. J. Schoeneck, Syracuse, N. Y.—p. 308.
Blood Transfusions in Pregnancy: Review of 3,000 Cases. E. G. Hamilton and A. P. Martini, St. Louis.—p. 313.
Postoperative Hormone Therapy to Spare Remaining Ovarian Tissue. W. D. Owens, Miami Beach, Fla.—p. 326.
Use of Stilbestrol in Management of Menopause. Z. J. R. Hollenbeck and P. J. Reel, Columbus, Ohio.—p. 331.
Mental Disorders Associated with Childbearing. D. A. Boyd Jr., Indianapolis.—p. 335.

Prevention of Toxemia of Pregnancy.—Colvin and his colleagues attempted to prevent true toxemia of pregnancy by the administration of thyroid or iodine. Basing their reasoning on the premise that thyroid or iodine limits or prevents a cholesterol-vascular change in the placental vessels and thus lessens the incidence of infarction and toxemia, they have employed this therapy in 273 cases. Iodine proved much more potent than thyroid in preventing true toxemia (as differentiated from vascular disease) of pregnancy. The administration of iodine to patients with vascular disease of pregnancy failed to lower the already low incidence of toxemia among such patients, but when iodine was administered to normal pregnant women the frequency of toxemia was reduced almost 75 per cent. The ophthalmoscope is a most valuable aid in differentiating true toxemia of pregnancy and vascular disease during pregnancy. A low basal metabolic rate is a predisposing factor in true toxemia of pregnancy. Hypercholesteremia, induced both by pregnancy and by a lower basal metabolic rate, predisposes to cholesterol-vascular change in the placental vessels. This change is the probable antecedent to thrombosis, infarction and true toxemia of pregnancy. Lipoiodine (Ciba) is a pleasant, well tolerated form of iodine; it does not require an initial or subsequent determination of the basal metabolic rate and, if one tablet is given daily from the end of the third month of pregnancy to full term, an immense reduction in the frequency of true toxemia of pregnancy may be anticipated.

Treatment of Gonorrhea.—According to Smith and Deakin the coordinated effort of a clinician, a bacteriologist and a medical social worker will aid in the management of gonorrhea in women and improve the therapeutic results in large clinics. A joint male and female clinic aids materially in case control. A comprehensive treatment routine is more effective than haphazard methods. Sulfathiazole is a safe and efficient therapeutic chemical. A single five day 20 Gm. course of the drug has resulted in a cure rate of 94.9 per cent. The recently improved results in the treatment of gonorrhea in women at Washington University Clinics are attributed to (1) the use of sulfathiazole, (2) the use of improved methods of culturing the gonococcus, (3) the development of an improved technic of case finding and case holding, (4) the use of an adequate form for statistical analysis and (5) the education of the public about gonorrhea and its cure.

American Journal of Ophthalmology, Cincinnati

25:135-260 (Feb.) 1942

*Some of the Most Important Ocular and Orbital Wounds in War. W. B. Doherty, New York.—p. 135.
Study of Aqueous Humor as Aid to Understanding Uveitis and Certain Related Conditions: I. Preliminary Report. R. Irvine, A. R. Irvine and Mary Dailey Irvine, Los Angeles.—p. 150.
Disability Lawsuit Following Successful Bilateral Cataract Extraction. R. W. Danielson and J. C. Long, Denver.—p. 164.
Intraepithelial Epithelioma of Cornea and Conjunctiva (Bowen's Disease). J. S. McGavic, New York.—p. 167.
Sex Linked Hereditary Nystagmus. R. W. Waggoner, Ann Arbor, Mich., and D. A. Boyd, Indianapolis.—p. 177.
Ophthalmologic Findings on Draftees from Washington, D. C., Military Area: Preliminary Report. W. T. Davis and A. E. Meisenbach Jr., Washington, D. C.—p. 181.
Role of Meibomian Glands in Recurrent Conjunctivitis: Review with Experimental Observations. R. B. Scobee, St. Louis.—p. 184.
Cataract Extraction After Glaucoma Operation. J. M. McLean, New York.—p. 192.
Systemic Disturbances from Errors of Refraction and of Diet. R. M. Moose, San Bernardino, Calif.—p. 194.
Is Enucleation Indicated in Early Cases of Intraocular Malignant Melanoma? Report of Two Cases. P. Lehrfeld, Philadelphia.—p. 199.

Ocular and Orbital Wounds of War.—Doherty states that the ingenious devices of war created for the wholesale slaughter of man cause many interesting, weird and freak wounds in all branches of medicine, including ophthalmology. To understand the clinical picture of a fantastic wound of the eye and of the orbit a thorough knowledge of their anatomy must be had. For any injury of the eye or orbit not only the eye and orbit should be carefully examined but the mouth and oral cavity and the bone and skin around it, vision and muscle balance should be determined, intranasal adhesions should be looked for, the exact location of the foreign body should be determined by roentgen study and a complete neurologic study should be included. If roentgenography is not available, probing must be resorted to. This often eliminates a Krönlein operation later to remove fragments of a shell. Many of the so-called red or inflamed eyes treated for inflammation sometimes have harbored foreign material for years, and its presence is finally detected only by a special and careful roentgen study. Five unusual conditions are found in ophthalmologic war surgery: traumatic proliferating choroidoretinitis of Lagrange, spastic entropion (blepharospasm), avulsion of the optic nerve, true or false enophthalmos and a hematic pigmented ring of the disk. The preservation and the tolerance of an eye to foreign material does not depend on the actual microbic invasion but on the chemical decomposition of the foreign substance and on mechanical irritation. The iris and the ciliary body usually react more seriously than does the lens or the vitreous. Copper usually induces a violent inflammation, iron if not encapsulated forms an oxide and causes a discoloration, and the reaction from nonmagnetic material is more serious because its extraction causes more trauma and manipulation. The appearance of an injured eye gives no clue as to the absence or presence of a foreign body. Any immediate wound of the orbit or surrounding tissue usually produces swelling, ecchymosis and profuse intraorbital hemorrhage often accompanied by exophthalmos. In the first aid station after asepsis has been carried out the attending surgeon could, by knowing a few important fundamentals, prevent many deformities of the lids and orbit and save many eyes by proper first aid treatment. For extreme exophthalmos a 1:3,000 ointment of mercury bichloride should be instilled in the culdesac, the lids sutured together and an appropriate dressing applied. The sutures should not be placed directly over the cornea. Restorative work should not be attempted for two to four weeks. This also applies to the removal of or the probing for bullets. No tissue and, above all, no fragments of bone found around the orbital margin should be removed. The attending surgeon's work should consist in replacing the mutilated parts in as good a position as possible and of applying a snug supporting dressing for transportation to the rear. Even if the globe is hopelessly injured the eyeball can be more skilfully enucleated after the ecchymosis and swelling have subsided. There is little danger of sympathetic ophthalmia from a mutilated eyeball allowed to remain in the socket for two weeks. Cartilaginous grafts, adipose grafts and metallic plates have been used successfully for the repair of substance lost from the orbital margin.

American Journal of Public Health, New York

32:125-234 (Feb.) 1942

Health Department Service in War Emergency. M. F. Haralson, Honolulu, Territory of Hawaii—p. 125.
Stamp Out Gonorrhea Now. J. L. Rice, New York.—p. 129.
Uniformity in Control of Communicable Diseases. H. Emerson, New York.—p. 131.
Air Raid Medical Administration—Current British Practice. H. Williams, Baltimore.—p. 137.
*Silicosis and Other Health Problems of Metal Miners. W. C. Dreessen, R. T. Page and H. P. Brinton, Bethesda, Md.—p. 142.
*Food Poisoning Outbreaks Involving Smoked Fish: Their Epidemiology and Control. I. Kleeman, S. Frant and A. E. Abrahamson, New York.—p. 151.
How Important Is the Dental Health Problem?—Nationally?—Locally? I. V. Hiscock, New Haven, Conn.—p. 159.
Shall Public Health Physicians Attempt to Assess Nutritional Status of School Children? Susan P. Souther, Columbus, Ohio.—p. 166.
Problems in Laboratory Diagnosis of Rabies. W. D. Stovall and S. B. Pessin, Madison, Wis.—p. 171.
Studies on Single Injection Method of Canine Rabies Vaccination. H. N. Johnson and C. N. Leach, Montgomery, Ala.—p. 176.
Sewage Disposal Problems at Army Camps. P. Hansen, Chicago.—p. 181.
Willingness of Individuals to Be Examined for Tuberculosis. G. E. Harmon, Detroit.—p. 187.
Development of Training Courses for Food Handlers in Texas. L. Dodson, Austin, Texas.—p. 189.
New Light on Relation of Housing to Health. R. H. Britten, Bethesda, Md.—p. 193.

Diseases of Metal Miners.—On the basis of the data obtained from the occupational and medical histories and physical and roentgen examination of 783 metal mine workers in Utah and the determinations of the average concentration of atmospheric dust in the environment, Dreessen and his associates conclude that: 1. In Utah mines the prevalence of silicosis (9.1 per cent) is lower than in certain other areas where lead ores are mined. This is possibly due to differences in the silica content of the ore and the mining operations. 2. While the lead hazard in these mines is not especially acute, lead intoxication occurs. 3. If the atmospheric dust in these metal mines is kept below ten million particles per cubic foot of air, no disabling silicosis should occur and morbidity should decrease. 4. The reduction in concentration can be accomplished by proper use of present control measures. Preemployment and annual medical examinations should enable the physician to detect silicosis, active pulmonary tuberculosis, high blood pressure, nephritis, diabetes, syphilis and heart disease during their incipient stages and to advise the worker on remedial measures.

Food Poisoning from Smoked Fish.—Kleeman and his associates report the occurrence in April 1934 of 32 cases of food poisoning due to smoked fish among residents of Brooklyn and Queens and in 2 visitors from Newark, N. J., and in July 1940 of 64 cases of acute gastroenteritis in Brooklyn. Three of the 98 patients died. No specific food poisoning organisms could be isolated on bacteriologic examination of the remaining samples of fish responsible for the first outbreak. However, several samples had high bacterial counts of Proteus vulgaris, which organism, although not considered pathogenic under ordinary circumstances, when found in food may well be responsible for symptoms of food poisoning, and certainly the finding of the organism indicates improper handling of the fish. As the source of the fish causing the second outbreak was traced the health department embargoed approximately 1,000 pounds of smoked fish from this plant found in the retail stores. At the plant the vats used for washing, soaking and salting fresh fish drained directly into a sewer line connected in common with a

toilet drain. This sewer pipe emptied into a ditch close to the plant. A sample of the ditch water contained Salmonella typhi murium. The persistent efforts of health officials and the cooperation of the more progressive operators have caused food industries to accept the higher standards of sanitation in processing and refrigerating smoked fish. The consumer should be made to realize that smoked whitefish, butterfish and similarly processed fish are perishable foods and require refrigeration at 50 F. or below and the utmost care in handling.

American Review of Tuberculosis, New York

45:117-242 (Feb.) 1942

*Voluntary Termination of Artificial Pneumothorax: Review of 200 Cases. G. F. Aycock and P. E. Keller, Denver.—p. 117.
*Pneumothorax Treatment of Pulmonary Tuberculosis: Results in Follow-Up of 117 Cases. A. Hurst and S. Schwartz, New York.—p. 132.
*Prognosis and Treatment of Minimal Pulmonary Tuberculosis. I. D. Bobrowitz, Otisville, N. Y.—p. 144.
Survey of Persons Exposed to Tuberculosis in Household: Necessity for Prolonged Observation of Contacts. H. Beeuwkes, R. G. Hahn and P. Putnam, New York.—p. 165.
Transient Pulmonary Infiltrations: Case with Eosinophilia (Loeffler's Syndrome) Associated with Amebiasis. Amanda Hoff and H. M. Hicks, New York.—p. 194.
Two Separate Specific Immune Phenomena in Tuberculosis: Concrete Demonstration. H. J. Corper and M. L. Cohn, Denver.—p. 200.
Effect of Sulfathiazole and Allied Compounds on Human Tubercle Bacilli in Vitro. H. C. Ballon and A. Guernon, Prefontaine, Que., Canada.—p. 212.
Sulfathiazole in Experimental Tuberculosis of Guinea Pig. H. C. Ballon, A. Guernon and M. A. Simon, Prefontaine, Que., Canada.—p. 217.

Voluntary Termination of Artificial Pneumothorax.—Aycock and Keller report 200 cases of artificial pneumothorax voluntarily terminated in order to show that prolonged and indefinite collapse is not applicable to all cases of artificial pneumothorax. The dominant tissue reaction prior to the induction of artificial pneumothorax was exudative in 179, caseous pneumonic in 3 and fibrocavernous in 18. The time range since expansion was completed was from one to sixteen years. The reactivation incidence in the far advanced exudative series indicates that the time element of collapse does not have any bearing on future reactivation after reexpansion is completed. Of 12 cases under collapse for less than eighteen months, the original lesion of 1 reactivated fifty-five months after reexpansion. Of 11 under collapse for three to four years the lesion of 1 reactivated twelve months after reexpansion. Among 13 under collapse for eighteen to twenty-four months the lesions of none showed reactivation. The same was true for 11 cases under collapse for four or more years. Of 36 patients under collapse for two to three years the lesions of 2 reactivated. The incidence of reactivation for these 83 patients was 4.8 per cent. In the moderately advanced exudative cases the absence of any relation between the duration of collapse and reactivation after reexpansion was even more clearly emphasized. The study fails to show any connection between reexpansion and subsequent reactivation. Aside from the inconvenience and expense to the patient of a prolonged and indefinite collapse under artificial pneumothorax, the chief disadvantage is the possible development of serious complications. Prolonged pneumothoraces, with or without effusion, sometimes show considerable thickening of the visceral pleura, with a fixation of the collapsed lung, which results in the "unexpandable lung." Hypertrophy and failure of the right side of the heart and associated mediastinal distortion in such cases assume an increased importance as the end result is grave and deserve further serious study.

Pneumothorax Treatment of Pulmonary Tuberculosis.—Hurst and Schwartz report the end results in 117 cases in which pneumothorax collapse therapy was employed for a minimum of two years before it was discontinued and the lungs were reexamined. There has been one death, the disease in 79 is apparently cured, in 16 it is arrested and in 21 it is active. There were twelve homolateral and seventeen contralateral relapses. The best results were observed in cases with at least four years of pneumothorax. An abrupt cessation of refills and careful watching of the lung as it reexpands appeared preferable to gradual reexpansion of the lung. Early pneumothorax in cases in which the sputum was positive was indicated regardless of the absence of a cavity. The best results were observed in cases of ideal collapse, that is without adhesions to the apex or the costal wall of the lung. The early Jacobaeus operation should be considered when adhesions exist, even though the sputum is negative.

Minimal Tuberculosis.—Bobrowitz evaluates the methods of treating minimal pulmonary tuberculosis by analyzing the prognosis of this type of lesion in 190 patients with minimal infiltrations discharged from the Municipal Sanatorium, Otisville, N. Y., in 1934 and 1935. One hundred and seventy-six of these patients were again studied in July 1940 and their condition on discharge was compared with their last follow-up examination. Of the patients 124 had unilateral lesions, 44 bilateral lesions, 9 thick pleura and 13 an increase in pulmonary markings; 160 had no complications. At the time of discharge 154 patients had no symptoms, 15 complained of expectoration, 17 of cough and expectoration, 1 had cough and slight dyspnea and chest pain, 1 had digestive disturbances, 1 had lost weight and 1 had fever and convulsions. All but 3 patients had sanatorium observation, bed rest, symptomatic care, gradual increase in physical activities and occupational therapy; in 2 of the 3 pneumothorax was attempted and 1 had pneumothorax. The value of sanatorium care was clearly illustrated: 164 were definitely benefited and were not active at the time of discharge. Even the 10 patients with still active disease were improved, the condition of 11 remained unimproved and that of 5 was unknown. One hundred and seventy-six of the patients received known care after discharge. Comparative roentgenograms were available for 129 and those of 103 were unchanged or improved and those of 26 showed progression or that collapse therapy was needed. If active therapy had been instituted for all the patients, 80 per cent would have had unnecessary collapse therapy. Even after long periods of observation only 15 patients required collapse therapy. It was possible to compare the sputum of 156 patients: that of 96 remained negative, of 23 it was converted from positive to negative, of 8 it remained positive, of 29 it turned positive after being negative, and the condition of the sputum of 34 was unknown although in many the tuberculous condition was compatible with a negative sputum. The physical condition of 137 patients on follow-up ranged from excellent or apparently cured to inactive, of 5 it was poor, of 5 it was guarded, of 32 it was unknown and 11 patients had died. The study indicates that routine collapse therapy of minimal pulmonary tuberculosis is not justified, as the disease in 75 to 80 per cent resolves or becomes fibrotic or stable with conservative therapy. Collapse therapy should be instituted only when especially indicated.

Archives of Dermatology and Syphilology, Chicago

45:455-640 (March) 1942

Serologic Diagnosis of Syphilis: Value of Complement Fixation and Agglutination with Spirochetal Antigens and Relation of Spirochetal Antibody to Wassermann Reagin. J. A. Kolmer, Philadelphia.—p. 455.
New Bismuth Compound Identical in Chemical Origin with Sobismol Mass. W. Van Winkle Jr. and P. J. Hanzlik, San Francisco.—p. 478.
Early History of American Dermatology. P. E. Bechet, New York.—p. 482.
Prevalence of Syphilis in Virgin Islands of United States: Results of Serologic Survey. G. M. Saunders, Cleveland.—p. 506.
Solution of Aluminum Citrate as Substitute for Solution of Aluminum Acetate N. F. T. Butterworth and L. W. Wolfe, Reading, Pa.—p. 514.
Threshold Erythema Dose of Roentgen Rays: I. Review of Literature and Comment on Variation of Doses in Use in Australia, United States and England. J. C. Belisario, Sydney, Australia, and R. E. Pugh Jr., Pasadena, Calif.—p. 519.
*Tuberculin in Dermatologic Diagnosis, with Special Reference to Purified Protein Derivative (P. P. D.). Carmen C. Thomas, Philadelphia.—p. 544.
Contact Dermatitis from Emetine Hydrochloride. R. L. Kile and A. L. Welsh, Cincinnati.—p. 550.
External Contact with Monoethyl Ether of Diethylene Glycol (Carbitol Solvent). A. G. Cranch, New York; H. F. Smyth Jr. and C. P. Carpenter, Pittsburgh.—p. 553.
*Treatment of Cutaneous Diseases with Radon Ointment and Radium Pads: Preliminary Report. L. Isaak, New York.—p. 560.
Ainhum Associated with Hyperkeratosis Palmaris et Plantaris. G. A. Spencer, New York.—p. 574.

Tuberculin in Dermatologic Diagnosis.—Thomas subjected 79 patients with various dermatoses to one hundred and nine parallel tests with purified protein derivative and graded freshly prepared dilutions of a potent old tuberculin. The results confirm those of other investigators and indicate that

the first test dose of 0.00002 mg. of purified protein derivative is equivalent to from 0.002 to 0.001 mg. of old tuberculin and that the second test dose (two hundred and fifty times the first) is equivalent to approximately 1 mg. of old tuberculin. No positive reactions were obtained with the purified protein derivative in persons in whom they were not also elicited with old tuberculin and vice versa. Purified protein derivative is therefore specific in detecting sensitized persons.

Radium Pads for Cutaneous Disease.—Isaak reports excellent results in the treatment of 85 patients with various cutaneous diseases with radon ointment or radium pads. Radon, the first product of decay of radium, can be separated from its mother substance by suction into a vacuum, and if melted petrolatum is sucked into the same vacuum and thoroughly shaken a uniform radon ointment is created. The ointment is placed in small collapsible tubes. A radium pad has a body or carrier of linen or of a fine meshed webbing of bronze or silver on which radium salt is spread uniformly in as fine a layer as possible with a good lacquer. A radium pad looks like a piece of oiled silk, is flexible and can be molded to the contour of the body. The pad keeps its radioactivity practically all the time and is therefore always ready for use, while the ointment loses half of its intensity within about four days. The radon ointment and radium pad treatment was successful for cases of chronic lichen simplex, chronic lichenified eczema, lichen planus, hypertrophic lichen, marginal eczema and vulval kraurosis with leukoplakia. The results were less satisfactory in cases of psoriasis. The treatment seemed to have an excellent effect on arthropathic psoriasis. The improvement in 1 of 2 cases of sycosis vulgaris was satisfactory. The condition in more than half of the patients with anal, vulval or scrotal pruritus healed or improved, but the results were not entirely successful and could well be improved. The use of the radium pad was preferred because of its flexibility, ease of application, uniform radiation output, better results obtained with it and the shortened time of treatment.

Archives of Internal Medicine, Chicago

69:369-550 (March) 1942

*Shock Syndrome Produced by Failure of Heart. E. A. Stead Jr. and R. V. Ebert, Boston.—p. 369.

*Severe Forms of Chickenpox in Adults with Autopsy Observations in Case with Associated Pneumonia and Encephalitis. J. J. Waring, K. Neubuerger and E. F. Geever, Denver.—p. 384.

Resting Peripheral Blood Flow in Hyperthyroid State. D. I. Abramson and S. M. Fierst, Cincinnati.—p. 409.

Electrocardiographic Studies on Artificially Produced Pulmonary Artery Occlusion in Human Beings. C. W. Semisch 3d and L. Merves, Philadelphia.—p. 417.

Effect of Inflammation on Concentration of Sulfanilamide in Pleural and Joint Fluids. R. Gregory, Galveston, Texas.—p. 429.

Short PR Interval Associated with Prolonged QRS Complex: Clinical and Experimental Study. J. S. Butterworth and C. A. Poindexter, New York.—p. 437.

Relation Between Symptoms of Uremia and Blood Levels of Phenols. R. Dickes, Cleveland.—p. 446.

Diffusion of Sulfanilamide into Artificial Peritoneal Fluid. A. Cantarow, C. L. Cubberley Jr. and A. E. Rakoff, Philadelphia.—p. 456.

*Diagnosis of Addison's Disease: Further Experience with Cutler-Power-Wilder Sodium Chloride Restriction Test. D. M. Willson, F. J. Robinson, Marschelle H. Power and R. M. Wilder, Rochester, Minn.—p. 460.

Syphilis: Review of Recent Literature. C. F. Mohr, P. Padget, R. Hahn and J. E. Moore, Baltimore.—p. 470.

Shock Syndrome.—Stead and Ebert studied a group of patients with known heart disease to evaluate the role of the heart, the peripheral vascular system and the blood volume in producing the shock syndrome seen in certain patients with congestive cardiac failure and in some with acute myocardial infarction. These patients present signs of a decreased peripheral blood flow with a diminished or an absent radial pulse, cold extremities, narrowed pulse pressure and a relatively well maintained diastolic pressure. The patients with congestive failure had an elevated systemic venous pressure but in those with acute myocardial infarction but no congestive failure this pressure was normal but extreme pulmonary congestion and edema was exhibited. There was evidence of slight hemoconcentration in patients with acute myocardial infarction, probably owing to loss of fluid into the lungs. Because of the simultaneous presence of diminished peripheral blood flow and congestion of the pulmonary or of the systemic venous bed, it is thought that the clinical picture of shock is produced by heart failure rather than by an inadequate venous return due to a decrease in blood volume or to peripheral pooling of blood. Peripheral circulatory failure and shock should not be applied to the signs incident to a decreased cardiac output due to heart failure but should be restricted to conditions in which the cardiac output is diminished because of an inadequate venous return.

Chickenpox in Adults.—During the last twelve months 4 persons more than 26 years of age with chickenpox were encountered at the Colorado General Hospital. Waring and his associates cite 2 cases in which the chickenpox was complicated by pneumonia and in 1 by fatal encephalitis and nephrosis. Both patients were healthy, robust men, who had contracted the disease from children in whom the course was mild. The main anatomic features in the 2 cases were (1) severe and generalized chickenpox, (2) severe, confluent, mononuclear and proliferative lobar pneumonia, (3) only in the fatal case an acute, toxic, moderate and diffuse encephalitis with purpura of the white matter and (4) acute, toxic and moderate nephrosis. The authors draw attention to the chickenpox virus as a possible cause for the mononuclear and proliferate pneumonia in man. Neurologic complications of varicella are not rare. In the fatal case all types of lesions were present, but some of them were only slight or moderate in intensity. The chief macroscopic and microscopic characteristic was the vascular disturbance, which pointed to a pronounced vasotoxic action of the virus. Petechial and ring hemorrhages dominated the picture. This is apparently the first case of cerebral involvement following chickenpox in an adult with necropsy to be reported. Only further necropsy reports will permit a more definite classification of encephalitis varicellosa. Special attention should be given to perivascular (perivenous) demyelination, with or without lesions of the axis cylinders, described in the literature and observed to a certain extent in the present fatal case. The relation of chickenpox encephalopathy to perivenous encephalitis is not incompatible with a relation to multiple sclerosis. Future study of the demyelination in chickenpox encephalitis may enhance the knowledge of the etiology and the pathogenesis of multiple sclerosis. Their microscopic examination of the renal sections lead the authors to believe that the likely cause for the renal changes was the virus of chickenpox.

Addison's Disease.—Willson and his co-workers employed the sodium chloride excretion test (after fifty-two hours of restriction) of Cutler, Power and Wilder (THE JOURNAL, July 9, 1938, p. 117) in the diagnosis of Addison's disease in 19 cases. The diagnosis in 11 had been made on clinical grounds and the test was used to obtain confirmatory evidence of the efficacy of the procedure; in 5 the test was a necessary adjunct in establishing the proper diagnosis, and in 3 the test was performed during treatment with desoxycorticosterone acetate. In addition, the test was employed in 44 cases of a variety of conditions, including many of "functional" asthenia. Of the 16 patients with Addison's disease who were not receiving desoxycorticosterone, 10 were unable to withstand the fifty-two hours of salt restriction. These 10 patients had sufficiently severe symptoms of crisis to permit the diagnosis of Addison's disease on clinical grounds. The concentration of chloride in the final four hour specimen of urine of 5 of the 6 patients in whom the test was completed was more than 225 mg. per hundred cubic centimeters, while that of sodium was more than 165 mg. Examination of the composition of the plasma in the sixth patient revealed evidence of adrenal cortical insufficiency. The 3 patients with the disease who were receiving desoxycorticosterone esters responded like subjects without the disease, that is with no increase in the excretion of sodium chloride. The greatest value of the salt restriction test has been in excluding the possibility of Addison's disease. Of the 44 patients examined 21 were classed as suffering from nervous exhaustion, postinfectious exhaustion, vagotonia, neurocirculatory asthenia and anxiety, 11 had certain manifestations which simulated some of those in Addison's disease and 12 had various mental and organic disorders. The 44 patients with 1 exception responded with typically low concentrations of sodium and chloride in the final four hour specimen of urine. In the exception the concentration of sodium and chloride was normal

in the plasma, the patient failed to react unfavorably to the salt restriction and this aided in excluding the diagnosis of Addison's disease. The test subjects the patient with Addison's disease to some danger, and the clinician should be prepared to recognize and to treat acute adrenal cortical insufficiency, should it occur.

Florida Medical Association Journal, Jacksonville

28:361-412 (Feb.) 1942

*Surgical Treatment of Extensive or Advanced Cancer of Skin. R. M. Fleming, Miami.—p. 373.
Use of Quinidine Sulfate in Treatment of Auricular Fibrillation. L. Limbaugh, Jacksonville.—p. 378.
Use of Cobra Venom and Oxygen in Control of Cardiac Pain. K. Hanson, Jacksonville.—p. 381.
*Quinine as Prophylactic in Influenza. H. A. Barge, Miami.—p. 383.
Fractures of Pelvis. T. H. Bates, Lake City.—p. 385.
Compensation in Industrial Ophthalmology. N. M. Black, Miami.—p. 387.

Surgical Treatment of Cancer of Skin.—Fleming reports 5 cases of advanced or extensive cancer of the skin; 2 of the patients have died and 3 are living, respectively two, three and four years after radical surgical removal with no evidence of disease. Prophylaxis in this type of cancer is possible by proper treatment of burns, early cutaneous grafting with skin of adequate thickness to prevent subsequent scarring or contracture. Granulomas and other cutaneous chronic irritations should be dealt with similarly if conservative measures fail to produce cure.

Quinine as Prophylactic in Influenza.—Barge believes that, since quinine causes a leukocytosis and increases the body defenses during the initial stage of influenza, it might be given as a prophylactic. Evidence indicates that the incidence of influenza is much lower among persons taking quinine than among those not using the drug. As physicians studying defense with regard to national health, it is well to impress on the younger men the seriousness of the disease and the importance of quinine as a possible prophylactic. In Florida, to which people from all parts of the country come to hotels, tourist camps, army camps and aviation fields, an epidemic is likely. Many authorities have stated that influenza is practically unknown among people who take quinine.

Journal of Pediatrics, St. Louis

20:145-280 (Feb.) 1942

*Etiology of Acute Infectious Gingivostomatitis (Vincent's Stomatitis). W. C. Black, San Diego, Calif.—p. 145.
Immunity to Whooping Cough as Judged by Skin Test on Rabbits. J. H. Lapin, Bronx, N. Y.—p. 161.
*Initial Response to Immunization with Diphtheria and Tetanus Alum Toxoid. W. C. Deamer, G. Bates and F. S. Smyth, San Francisco.—p. 169.
Diffusion of Sulfathiazole Into and From Peritoneum: Case of Pneumococcic Peritonitis Treated with Sulfathiazole Orally and Intraperitoneally. L. B. Slobody, G. Rook and D. Dragutsky, New York.—p. 182.
Sulfathiazole in Treatment of Pneumococcic Pneumonia in Infants: Brief Note on Development of Pneumococcic Meningitis During Therapy. P. V. Woolley Jr., Portland, Ore.—p. 185.
Five Year Clinical Study of Factors Affecting First Dentition. H. E. Thelander, San Francisco.—p. 187.
Vitamin B6 (Pyridoxine Hydrochloride) in Treatment of Pseudohypertrophic Muscular Dystrophy Among Children. H. M. Keith, Rochester, Minn.—p. 200.
Acute Yellow Atrophy of Liver: Report of Case in Twelve Year Old Girl with Autopsy Findings. Rosa E. Prigosen and M. B. Gordon, Brooklyn.—p. 208.
Difficulty in Beginning Respiration Seen in Infants Delivered by Cesarean Section: Analysis of One Hundred Consecutive Cesarean Sections. A. Bloxsom, Houston, Texas.—p. 215.
Unilateral Paralysis of Diaphragm Without Involvement of Brachial Plexus. R. J. Blattner, St. Louis.—p. 223.
Self Selection of Diets. C. P. Richter, Baltimore.—p. 230.
Physical Expression of Psychogenic Disturbance in Children. S. S. Lamm, Brooklyn.—p. 237.

Etiology of Acute Infectious Gingivostomatitis.—Black presents clinical and experimental evidence which demonstrates that herpes simplex virus is the primary etiologic agent of "acute infectious gingivostomatitis," which condition, he suggests, should be known as acute herpetic gingivostomatitis. The course of the experimental lesion in the inoculated rabbit's eye is typical of herpetic keratoconjunctivitis produced by known strains of herpes simplex virus. The infection is easily transferred to other rabbits. The lesion in the rabbit's eye contains intranuclear acidophilic inclusion bodies, indistinguishable from those produced by known strains of herpes simplex virus. After the infected animals recover they are immune to further virulent inoculations. The agent, carried in serial inoculations of rabbits and mice for months, produces uniformly the typical clinical picture of fatal herpetic encephalitis when injected intracerebrally into rabbits or mice. The presence of the herpes simplex virus in the lesions of acute infectious gingivostomatitis is neither incidental nor accidental but etiologic. The virus is not commonly present in the normal mouth or in mouths with other types of inflammation, whereas it is found on a single examination in approximately 90 per cent of the mouths in which there is acute infectious gingivostomatitis. Humoral immunity is present after the disease has run its course, but it is not commonly present during the early stages of the disease. Ten, or more than 40 per cent, of 23 patients were known to have been intimately exposed to a source of herpes virus, whereas only 8 per cent of patients with other types of oral inflammation gave such a history. A typical attack of acute herpetic gingivostomatitis followed inoculation of a volunteer's mouth with the fluid from the vesicles of a herpes simplex lesion.

Diphtheria and Tetanus Alum Toxoid.—Since 1937 Deamer and his associates have given combined diphtheria and tetanus alum toxoid to 600 infants less than a year old. At first three injections of 1 cc. of toxoid were given at intervals of one month. Recently the interval was lengthened to two months. Two months or more after the last injection a Schick test was made and blood was obtained by venipuncture from 242 infants to determine the tetanus antitoxin content by guinea pig assay. The variation in tetanus antitoxin response was considerable, but the blood of all of them contained more than 0.01 unit and of some as much as 10 units of antitoxin per cubic centimeter of serum. Schick tests were negative in 96 per cent, and the infants tolerated the antigen well. A study of their response to a late "recall" injection of tetanus toxoid is in progress.

Kentucky Medical Journal, Bowling Green

40:41-74 (Feb.) 1942

*Upper Respiratory Infections: Evaluation of Immunization. K. N. Victor, Louisville.—p. 43.
Catarrhal Conjunctivitis. W. C. Wells, Glasgow.—p. 46.
Surgical Treatment of Trachoma. W. A. Poole, Lexington.—p. 49.
Diagnosis of Mastoiditis. W. H. Garnier, Madisonville.—p. 52.
Present Aspect of Leprosy. A. O. Pfingst, Louisville.—p. 56.
Submucous Resection. W. S. Snyder Jr., Frankfort.—p. 59.
Arteriosclerosis of Retina. W. Dean, Louisville.—p. 62.
Complications After Cataract Extraction: Analysis of 500 Attempted Intracapsular Extractions. C. D. Townes, Louisville.—p. 64.
Ocular Tuberculosis. P. C. Kronfeld, Chicago.—p. 66.

Upper Respiratory Infections.—Victor states that individual resistance determines the effect of preventive and immunization measures against the common cold and related infections of the upper part of the respiratory tract. The factors that influence the individual resistance are dietary deficiencies, fatigue, general systemic diseases, anatomic variations, contacts, exposure, climatic conditions, environment, social status, epidemic prevalence, occupation and geographic locations. Assuming that the symptoms, severity, complications and duration of a cold may be prevented or lessened by decreasing the virulence and number of organisms present, the advantage of immunization of 500 employees of an industrial plant with oral and with subcutaneous vaccine over four years was evaluated. The first year (September 1935-March 1936) with no immunization measures the 500 subjects had an average of three and six-tenths colds of an average duration of five and seven-tenths days and there were 4.5 cases of pneumonia per hundred patients. The corresponding figures for the second year for the 250 employees given six injections of 0.25 to 1 cc. of vaccine subcutaneously at intervals of three days were two and six-tenths, four and six-tenths and 3, and for the 250 untreated employees the figures were three and four-tenths, five and three-tenths and 4.5. The third year 166 subjects were not treated, 167 were given six subcutaneous injections of vaccine and 167 were given one capsule of oral vaccine for seven days and then one capsule two times a week until March. The figures for the colds, their duration and the number of cases of pneumonia for the three groups were three and five-tenths, five and two-tenths and 6.01; two and three-tenths, four and three-tenths and 2.25, and two and eight-tenths, four and six-tenths and 4.51. The fourth year

the 500 employees were divided into five groups of 100 subjects and each group was given varying amounts of subcutaneous or oral vaccine for different lengths of time. The group given 0.25 to 1 cc. of vaccine subcutaneously every three days for six injections and then 1 cc. every month and also one capsule of oral vaccine for seven days followed by one capsule two times a week had the least number of colds (one and eight-tenths) of the shortest duration (two and eight-tenths days) and among them there was only 1 case of pneumonia.

Medicine, Baltimore

21:1-94 (Feb.) 1942

Infections with Virus of Lymphocytic Choriomeningitis. T. W. Farmer and C. A. Janeway, Boston.—p. 1.
Tonsillectomy and Poliomyelitis: I. Epidemiologic Considerations. W. L. Aycock, Boston.—p. 65.

Military Surgeon, Washington, D. C.

90:113-224 (Feb.) 1942. **Partial Index**

Progress of the Part the Veterans' Administration Is Playing in National Defense Program. F. T. Hines.—p. 113.
Policies and Activities of Medical Department of United States Navy in Present National Emergency. R. T. McIntire.—p. 119.
Present Policies and Activities of United States Public Health Service. W. F. Draper.—p. 123.
Trailer Refrigerator for Protection of Food on March and in Field. D. P. Fenhallow.—p. 130.
Some Observations on Efficacy of Convalescent Mumps Serum. W. H. Bailey and A. T. Haerem.—p. 134.
Dental Service in Combat. G. E. Meyer.—p. 152.
Streptococcus Viridans Septicemia: Cure with Sulfapyridine. G. B. Moore Jr. and A. J. Tannenbaum.—p. 155.
Local Use of Sulfanilamide and Sulfathiazole in Extraction Wounds: Preliminary Report. L. Weiner.—p. 157.
Prostigmine in Treatment of Chronic Deafness and Tinnitus Aurium. A. F. Judge.—p. 177.
Medical Service with Horse Mechanized Cavalry on Maneuvers. H. P. Macnamara.—p. 182.
Plan of Short Period Instruction Designed to Correct Deficiencies Revealed in Training Inspections. F. B. Queen and A. R. Mailer.—p. 186.
*Chigger and Jigger Bites. J. E. Weigel.—p. 189.

Chigger and Jigger Bites.—Weigel states that, since the irritation and discomfort from bites of chiggers and jiggers have an unfavorable effect on the morale and physical well being of troops, medical officers should have knowledge of their prevention and treatment, especially the medical officer in a warm region where the two mites are prevalent. A check made on 200 soldiers who spent ten days in the field during July 1941 revealed that 78 per cent had three or more chigger bites on their return to the garrison. The fierce, maddening itch is not due to the bite but to the liquefaction of epidermal tissue by a digestive secretion that the larva of the chigger injects into the wound. Prevention is preferred to treatment, and powdered sulfur is the best repellant. Four parts of a vanishing cream known as "Hazeline Snow" mixed with one part of powdered sulfur and applied to the skin leaves an almost invisible film of sulfur. When it was applied before going into the fields and reapplied after a soapy shower on return to camp none of the treated men had chigger bites, while unprotected men had numerous lesions. If the cream was applied to bites early, it ameliorated the pruritus and hastened healing. To remove the larvae present on the skin, a half hour of bathing with plenty of soapy water and then, after drying, a light application of the cream followed by a complete change of clothing is recommended. To relieve the intense itching and irritation the lesions should be sponged with 70 per cent alcohol several times a day, and a boric acid ointment containing 0.65 Gm. of phenol and 0.32 Gm. of menthol to the ounce should be spread on lightly followed by the dusting on of borated talcum powder. The bites of the sand flea or jigger produce similar lesions. Their prevention is based on the elimination of breeding and hiding places, clearing up of rubbish, admitting sunlight to dark places and filling up cracks and crevices in buildings. The most useful repellants are camphor and sulfur. A solution of camphor, menthol and phenol painted on the skin is of value. A small amount of the sulfur cream recommended for preventing and treating chigger bites destroys the insects. Sulfur fumigation can be used to destroy the insects hiding in barracks or buildings. If the sulfur cream is used constantly, the possibilities of dermatitis from sulfur irritation and toxic effects must be considered.

North Carolina Medical Journal, Winston-Salem

3:53-108 (Feb.) 1942

Diagnosis and Treatment of Intestinal Tuberculosis. C. D. Thomas, Sanatorium.—p. 53.
Concepts as to Etiology of Nonspecific Ulcerative Colitis. O. N. Smith, Greensboro.—p. 55.
Management of Nonspecific Ulcerative Colitis. C. G. Reid, Charlotte.—p. 58.
Amebic Dysentery as Seen in North Carolina. J. M. Ruffin and W. Schulze, Durham.—p. 62.
Labor and Laughter of a State Board of Medical Examiners. B. K. Hays, Oxford.—p. 64.
Coarctation of Aorta. T. W. Baker, Charlotte.—p. 66.
Measles: Wake County Epidemic of 1941. C. F. Williams, Raleigh.—p. 70.
Some Impressions Gained from Two Hundred and Fifty Cholecystectomies. G. C. Cooke, Winston-Salem.—p. 74.
Changing Trends in Therapy. J. A. Rose, Winston-Salem.—p. 78.
Vinethene Anesthesia. M. L. Slate, High Point.—p. 82.
Mechanics of Contraception. W. C. Highsmith, Fayetteville.—p. 85.
Sulfonamides in Surgery: Review of Literature. A. deT. Valk, Winston-Salem.—p. 87.

Oklahoma State Medical Assn. Jour., Oklahoma City

35:47-92 (Feb.) 1942

Electrosurgical Treatment of Pathologic Cervix. K. J. Wilson, Oklahoma City.—p. 47.
Hypertrophic Arthritis and Physiotherapy. E. Goldfain, Oklahoma City.—p. 51.
Syphilis: Problem for the Internist. W. C. Thompson, Stillwater.—p. 53.
Some Common Diseases That Can Be Helped by X-Ray. C. M. Ming, Okmulgee.—p. 55.
Functional Symptoms in Skin Disorders. O. G. Hazel, Oklahoma City.—p. 58.

Public Health Reports, Washington, D. C.

57:217-248 (Feb. 13) 1942

Occurrence of Hyaline Sclerosis and Calcification of Blood Vessels in Rats on Sulfaguanidine. F. S. Daft, L. L. Ashburn, S. S. Spicer and W. H. Sebrell.—p. 217.
Dental Status of Adult Male Mine and Smelter Workers. H. P. Brinton, D. C. Johnston and E. O. Thompson.—p. 218.

57:249-284 (Feb. 20) 1942

*Diphtheria Toxoid Treatment of Leprosy: Preliminary Report. G. H. Faget and F. A. Johansen.—p. 249.
Effects of Distillery Wastes and Waters on Microscopic Flora and Fauna of Small Creek. J. B. Lackey.—p. 253.
Relation of Plants to Malaria Control, with Special Reference to Impounded Waters. W. T. Penfound.—p. 261.

Diphtheria Toxoid for Leprosy.—Faget and Johansen point out that because of the favorable report of Collier on the treatment of leprosy with diphtheria toxoid 1 cc. of diphtheria toxoid was given every month for up to twenty months to 47 patients at the United States Marine Hospital at Carville, La. The study was controlled by giving 35 patients similar doses of the broth from which the diphtheria toxoid is produced. The results in the control group were better than those in the group given toxoid. There is no indication that the treatment has a favorable effect on leprosy.

Radiology, Syracuse, N. Y.

38:131-260 (Feb.) 1942. **Partial Index**

Congenital Deformities in Region of Foramen Magnum: Basilar Impression. W. T. Peyton and H. O. Peterson, Minneapolis.—p. 131.
*Influence of Single Dose of Commonly Used Laxatives on Gastrointestinal Motility: Comparative Study. S. Bruck and J. M. Fruchter, Philadelphia.—p. 145.
Roentgen Diagnosis of Spontaneous Internal Biliary Fistulas, Especially Those Involving Common Duct. L. H. Garland and J. M. Brown, San Francisco.—p. 154.
Calcification and Ossification of Vertebral Ligaments (Spondylitis Ossificans Ligamentosa): Roentgen Study of Pathogenesis and Clinical Significance. A. Oppenheimer, Beirut, Lebanon, Syria.—p. 160.
X-Ray Protection in Diagnostic Radiology. C. B. Brestrup, New York.—p. 207.
The Specialist as a Naval Medical Officer. A. H. Dearing, Bremerton, Wash.—p. 217.
Photoroentgenography in Tuberculosis Program. M. L. Pindell, Los Angeles.—p. 224.

Influence of Laxatives on Gastrointestinal Motility.—Bruck and Fruchter studied the gastrointestinal motility of 15 apparently healthy young volunteers following the administration of a single dose of commonly used laxatives: cascara, licorice powder, magnesium citrate, magnesium sulfate or castor oil. For a control the gastrointestinal motility of each subject was

studied a week or ten days preceding the study with laxatives. Roentgenograms were made immediately and one hour, three, four, six, eight, twenty-four and forty-eight hours after a barium sulfate meal. Fluidextract of cascara sagrada and compound powder of senna did not alter the control gastric evacuating time. The magnesium salts—citrate and sulfate—and castor oil delayed gastric motility. Each laxative caused an initial irritability of one to three hours of the proximal jejunum. With magnesium sulfate there was a definite delay in the passage of the meal through the small intestine. The other laxatives moderately increased the motility of the small intestine. Fluidextract of cascara sagrada slightly increased the emptying time of the colon. Compound powder of senna and castor oil produced the most satisfactory and complete emptying of the colon. There was more retention at forty-eight hours after the taking of either of the magnesium salts, in spite of numerous defecations, than the control. Castor oil and compound powder of senna appear to be the best laxatives for colonic cleansing in preparing the patient for roentgen examination.

Rhode Island Medical Journal, Providence

25:23-54 (Feb.) 1942

Surgical Treatment of Peptic Ulcer. A. W. Eckstein, Providence.—p. 23.

25:55-74 (March) 1942

Leprosy: Report of Case and Brief Summary of Certain Interesting Features of Disease. H. S. Barrett, Providence.—p. 56.
Cancer of Skin. F. Ronchese, Providence.—p. 61.

Tennessee State Medical Assn. Journal, Nashville

35:39-82 (Feb.) 1942

Problem of Tuberculosis in Chattanooga and Hamilton County. C. A. Hartung, Chattanooga.—p. 39.
Treatment of Hemorrhoids. M. W. Holehan, Memphis.—p. 43.
Rupture of Intervertebral Disks. R. E. Semmes and F. Murphey, Memphis.—p. 49.
Low Back Pain and Injection Treatment. L. Vinsant, Marysville.—p. 53.
Contact Lenses—Invisible Eyeglasses. J. W. McKinney, Memphis.—p. 58.
"The Wish to Fall Ill." E. D. Bond, Philadelphia.—p. 62.

Texas State Journal of Medicine, Fort Worth

37:639-702 (Feb.) 1942

Importance of Physical Diagnosis in Practice of Medicine. R. H. Major, Kansas City, Mo.—p. 647.
Sinobronchial Disease, the Stepchild of Medicine. O. E. Egbert, El Paso.—p. 651.
Mental Health—Its Relation to Child Growth and Development. T. Harris, Galveston.—p. 655.
Society's Responsibility for Protecting Mental Health of Children. R. L. Sutherland, Austin.—p. 658.
Reduction of Recurrence Rates Following Hernia Repairs. H. J. Shelley, Fort Worth.—p. 661.
Management of Acute Cholecystitis. P. M. Ramey and A. C. Scott Jr., Temple.—p. 664.
*Blood Findings in Acute Appendicitis. L. O. Dutton, El Paso.—p. 669.
Uterine Bleeding Complicating Pregnancy: Its Significance as Shown in 100 Consecutive Cases. T. F. Bunkley, Temple.—p. 672.
Melanosarcomas of Lip Margin and Conjunctiva: Case Reports. J. T. Stough, Houston.—p. 675.
Cataract Surgery. W. S. Webb, Fort Worth.—p. 679.
Hemorrhages into Anterior Chamber. H. L. Hilgartner Jr., Austin, and A. Pfitsch, San Antonio.—p. 681.

The Blood in Acute Appendicitis.—Dutton plotted the total leukocyte counts and neutrophils of 70 patients before they were operated on for acute appendicitis, of 17 for subacute appendicitis and of 25 for chronic appendicitis. Postoperatively the pathologic diagnosis was acute diffuse appendicitis in 31, acute catarrhal appendicitis in 36, chronic appendicitis in 20, subacute appendicitis in 6 and fibrosed appendix in 24. All but three of the leukocyte counts were above 12,000 leukocytes per cubic millimeter and a percentage of more than 80 for the neutrophils. It seemed fairly clear that, if the blood count is above 12,000 and the polymorphonuclear percentage above 80, acute diffuse suppuration of the appendix should be expected when the rule of immediate operation is in full force. If definite clinical indications of appendicitis are present but the blood count falls below the aforementioned figures, the chances are that the appendix will be in the catarrhal stage. A catarrhal, subacutely inflamed, chronically inflamed or fibrosed appendix cannot be determined by blood counts. Little diagnostic aid is to be obtained by considering the percentage of immature neutrophils in appendicitis, as an essentially similar variation is present in all cases. If eosinophils are present there is little likelihood that diffuse suppuration will be present.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

50:69-114 (Feb.) 1942

Ureteral Obstruction Following Irradiation Treatment of Cancer of Cervix. P. E. Hoffman, San Francisco.—p. 69.
Direct Injection of Esophageal Varices Through Esophagoscope. P. C. Samson and L. Foree, Oakland, Calif.—p. 73.
Bilateral Ovarian Dermoid Cysts Complicating Pregnancy. H. E. Bowles, Honolulu, Territory of Hawaii.—p. 78.
Treatment of Urinary Tract Infections of Pregnancy. A. Heldfond, Los Angeles.—p. 82.
*Body Weight in Spontaneous Myxedema. W. A. Plummer, Rochester, Minn.—p. 85.
Simplified Aseptic Intestinal Anastomosis: Experimental Study. H. P. Totten, Los Angeles.—p. 93.
*Local Implantation of Sulfathiazole as Therapeutic and Prophylactic Measure in Peritonitis: Experimental Study. M. J. Pearl and J. A. Rickles, Portland, Ore.—p. 99.
Treatment of Delayed Menstruation with Prostigmine: Relationship to Diagnosis of Pregnancy. L. L. Grossmann, Milwaukee.—p. 103.
Total versus Subtotal Abdominal Hysterectomy for Benign Conditions of Uterus. R. E. Ahlquist, Spokane, Wash.—p. 109.

Body Weight in Spontaneous Myxedema.—Plummer presents data on 200 cases of spontaneous myxedema which emphasize that overweight need not necessarily accompany the disease. The data consist largely of a correlation between the theoretically normal weight and the individual variable. Of the 200 patients 25 per cent were men and 75 per cent were women. The average age of the men was 47.4 years and of the women 48.4 years. The weight of 123 patients was from 1 to 50 or more pounds (0.4 to 22.7 Kg.) above the theoretically normal weight and of 77 it was normal (in 3 only) or 30 or more pounds (13.6 Kg.) below normal. The average basal metabolic rate of the patients in whom the theoretical weight was greater than normal was —31.4 and of those whose weight was normal or less than normal it was —34.6. For the entire group the average actual weight was 10 1/10 pounds (4.6 Kg.) more than the theoretically normal weight at the beginning of treatment. Contrary to what might be expected, the patients having the highest basal metabolic rate, that is those with the least severe myxedema, were, on the average, the most overweight, 21 3/10 pounds (9.7 Kg.). The decrease in overweight was progressive in the direction of the lowest basal metabolic rate. The data warrant the conclusion that when the disease is well established, or at least severe, there is an actual loss of body tissue which may not be apparent because of its being replaced by edema. Furthermore, the loss of body tissue becomes progressively greater as the disease becomes more severe. When the edema in spontaneous myxedema has been eliminated by the administration of thyroid, the patient may still be undernourished because of the previous cachexia. Later, if the basal metabolic rate is maintained within normal limits, the patient tends to gain weight by acquiring normal body tissue.

Sulfathiazole Locally for Peritonitis.—Pearl and Rickles state that the intraperitoneal introduction of sulfathiazole in sufficient concentration is effective in controlling and combating peritonitis produced in the rat by inoculating a pure culture of hemolytic Escherichia coli. Simultaneous introduction of a suspension of sulfathiazole with a dose of Esch. coli culture which alone produced a fatal peritonitis in rats completely protected the rats from any detectable peritoneal or systemic reaction. When a suspension of sulfathiazole was introduced ten hours after the peritoneal cavity was infected, all but 1 animal survived. Definite positive signs of an active spreading peritonitis were present in all before the drug was administered, and the infection left no residuums in the recovered animals. Sulfathiazole apparently exerted no harmful effects on the peritoneal cavity. Local application of sulfathiazole at the site of infection causes an immediate high concentration of the drug at the place where it is needed. This inhibits the growth of the colon bacillus, and thus the phagocytes can remove the contaminating material. Study of the blood levels of sulfathiazole in a number of rats suggests that the absorption of the drug from an infected peritoneum is more rapid than from a normal peritoneum and that a blood level is maintained that could combat any bacteremia present in active peritonitis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Urology, London

13:199-286 (Dec.) 1941

Stricture of Urethra. F. M. Loughnane.—p. 199.
Bilateral Urinary Calculus, with Review of Fifty-Five Personal Cases. H. P. Wiesbury-White.—p. 220.
"Delayed Action" Frostatectomy. G. H. Baines.—p. 230.

British Medical Journal, London

2:137-172 (Jan. 31) 1942

*Syndrome of Periodic Somnolence and Morbid Hunger (Kleine-Levin Syndrome). M. Critchley and H. L. Hoffman.—p. 137.
Heavy Percaine Spinal Anesthesia: Experience Gained in Series of 420 Cases. W. W. Mushin.—p. 139.
*Sudden Compression Injuries of Abdomen at Sea. N. P. Breden, A. L. d'Abreu and D. P. King.—p. 144.
Acute Relapsing Dermatitis Due to Nail Varnish. H. C. Semon.—p. 146.
Acute Appendicitis Associated with Intraperitoneal Hemorrhage from Rupture of Corpus Luteum. F. O'Gorman.—p. 148.

Periodic Somnolence and Morbid Hunger.—Critchley and Hoffman believe that the syndrome of periodic somnolence and morbid hunger described by Kleine and by Levin is a definite entity. Two cases are reported. Levin believes that there is a periodic excess of inhibition exerted by the highest cerebral centers, including those controlling gastrointestinal motility. From a study of their 2 cases the authors can form no definite conclusion as to the morbid anatomy and physiology of the syndrome. Despite the abnormal electroencephalographic changes in 1, the suggestion of a frontal lobe dysfunction is by no means convincing and they are far more tempted to suggest a pathophysiologic process within or near the hypothalamus. The changes were similar to those observed in epilepsy or in cases of epileptic predisposition in which fits never occurred. This probably indicates the existence of a cerebral dysrhythmia. Blood sugar and electroencephalographic studies during attacks might furnish more helpful data. Dextrose and insulin tolerance tests in 1 case indicated that hypoglycemia was not responsible. Apart from the drowsiness and hunger there were no other symptoms suggestive of hypoglycemia.

Casualty Compression of Abdomen at Sea.—Breden and his associates describe the visceral injury that is caused by compression or suction waves set up by the detonation of high explosives on land or at sea. Organisms permeating a contused colon were the cause of pelvic and subphrenic abscess which 2 patients had who recovered after drainage. There were 7 patients with severe melena but without serious complications who recovered, but 1 patient with lacerations of the ileum, peritonitis and compression injuries of the lungs died after a laparotomy and suture of the perforation. In addition to the abdominal injuries, blast effects in the lung were seen at necropsy of the patient who died. The patients who survived did not show symptoms or signs of severe blast injury to the lung. The immediate symptoms (vomiting with blood, diarrhea with melena and testicular pain presented by 4 patients) after sudden compression were not severe. The testicular pain was probably due to a direct compression effect. No patient had external bruising. None of the patients were seen in the first twenty-four hours. The results justify conservative management. Neither of the 2 patients with abscess showed positive signs demanding immediate laparotomy. Microscopic study of the lungs and small intestine of the patient who died disclosed edematous patches with many carbon particles and some basophilic débris. Many macrophages, attributed to the inhalation of sea water and fuel oil, were present. Sections of the ileum showed the hemorrhages to be most severe in the submucous and subperitoneal layers of the intestine. The hemorrhages in the intestine were more diffuse than was suggested macroscopically.

Journal of Laryngology and Otology, London

56:415-458 (Dec.) 1941

Otitic Meningitis. F. W. Watkyn-Thomas.—p. 415.
Postural Instillation: Method of Inducing Local Anesthesia in Nose. A. J. Moffett.—p. 429.

Lancet, London

1:129-158 (Jan. 31) 1942

*Outbreak of Paratyphoid B in Bristol: Note on Routine Investigation of Food Borne Epidemics. I. G. Davies, K. E. Cooper, D. S. Fleming, H. M. Gould and R. Williams.—p. 129.
Paratyphoid B Infection: Fatal Case; Development of Carrier State. T. F. Hewer.—p. 132.
*Bacteriology of Epidemic Paratyphoid Fever in Liverpool. H. D. Holt, A. C. T. Vaughan and H. D. Wright.—p. 133.
Staphylococcic Septicemia: Recovery with Sulfathiazole. W. A. Jackman and N. H. Martin.—p. 135.
Normoblastic Crises After Air Raid Injury. J. G. Humble.—p. 137.
Pancreatic Fistula Implanted into Stomach. H. C. Edwards.—p. 137.
Foreign Bodies in Air Passages. H. V. Morlock and B. G. Edelston. —p. 138.
Addition of Glucose to Stored Blood. R. A. Bono and J. F. C. Wilder. —p. 139.

Outbreak of Paratyphoid B in Bristol.—Between Aug. 18 and Oct. 30, 1941 268 cases suggestive of paratyphoid B infection were reported in Bristol. Laboratory evidence of the infection, Davies and his co-workers say, was present in 244, and clinical paratyphoid in 203; there were 41 intestinal carriers. Investigation of the source of infection disclosed a common confection prepared by one firm. Investigation of the firm's premises and staff narrowed down to a girl employee who had had a vague history of headaches and malaise and had ceased to work on August 2. She was visited and persuaded to have her blood and feces examined. Salmonella paratyphi B was isolated from the feces. Of 167 patients with the primary disease 102 (61 per cent) had consumed artificial cream from the confectionery. Opportunities for infection of this cream by the girl employee were present in each instance. Of the 41 intestinal carriers, 19 had consumed artificial cream from the firm, 9 were members of families in which a known case had occurred, 6 belonged to a family known to have consumed infected cream and 13 were untraced. Of the 244 patients with established infection 149 (61 per cent) were known to have either consumed food material which was known to be infected or were in intimate contact with a person known to have paratyphoid. Of the remaining 95 with untraced infections the onset of the illness of 65 began during the primary wave of the epidemic with similar dates of onset and a similar peak. A number of strains of the paratyphoid organism isolated from cases arising during and after the primary wave reveals that they are all of the same phage type, type I, which at present is common throughout the country. The best method of controlling epidemics of paratyphoid B is by examining the feces; Widal tests will miss many cases in the early stage. Bacteriologic study must also be made of the feces of all contacts and of people engaged in handling food. The management of all food factories must be impressed with the importance of strict cleanliness among the food handlers. Adequate washing and facilities for clean linen must be provided.

Bacteriology of Epidemic Paratyphoid.—Holt and his associates believe that the value of fecal cultures in the diagnosis of paratyphoid is illustrated by the fact that of 466 cases of paratyphoid B that recently occurred in and around Liverpool 96 per cent were confirmed by this method. The method was equally diagnostic at all stages of the infection, including the first week. Positive cultures were obtained at the first attempt from 402 of 439 cases (92 per cent), at the second from 32 and at the third attempt from 5. Fecal infection was particularly slow to clear up in women more than 20 years of age. Of 26 women more than 40, 9 continued to excrete paratyphoid bacilli in the feces for more than sixteen weeks. The ultimate origin of the epidemic is still uncertain, but its great extent appears to have been due to contamination of synthetic cream. The contamination was regarded as an accident in the history of 1 or more persons who became infected in the early days of the epidemic and whose occupation permitted them to infect 8 or more other persons in the same place of employment, who again may have contributed their quota to the final result. Two of the employees who were infected early when detected were ill at home with conditions labeled gastritis but which were actually paratyphoid; the other infected employees were detected while still at work. These facts emphasize the importance of bacteriologic examination of even mild intestinal disturbances and too that the hygiene of large bakeries requires most careful supervision.

Helvetica Medica Acta, Basel

8:525-654 (Nov.) 1941. **Partial Index**

Study of Meteorism. J. A. Mathez.—p. 525.
*Pathologic Aspects of Cerebrospinal Fluid in Poliomyelitis (Meningitic and Paralytic Stages). P. Lötscher.—p. 578.
Ferment Chemistry of Human Spermatic Fluid. C. A. Joël.—p. 595.
Study of Parathyrogenic and Idiopathic Forms of Tetany. T. Marti.—p. 601.

Cerebrospinal Fluid in Poliomyelitis.—Lötscher is concerned with the cerebrospinal fluid of the second and third stages of poliomyelitis after the invasion of the central nervous system by the virus. The first stage is characterized clinically by the absence of neurologic symptoms and a normal cerebrospinal fluid. Many patients are cured during the first stage. The majority of these purely "abortive cases" are not diagnosed. The author is concerned with 101 patients hospitalized during the second and third stages of poliomyelitis and subjected to one or several spinal punctures. The fluid pressure was normal in 44 per cent (70 to 150 mm. of water), in 43 per cent it was moderately increased (150 to 200 mm.) and in 13 per cent it was greatly increased (over 200 mm.). There was no complete parallelism between pressure and cell count, though the high pressures were usually accompanied by rather high cell counts. The Queckenstedt phenomenon was always positive. The cerebrospinal fluid was water clear in the majority of cases, but when the cell count was high a slight turbidity was visible against a dark background. Obvious spider web formation was observed in 2 cases, xanthochromia in 1. The cell count was increased in about 98 per cent. Cell counts of more than 1,000 were observed chiefly in the meningitic types. In the paralytic types the polyplegic patients usually had higher counts than did the monoplegic ones, but there was no parallelism between the severity of the disease and the cell count. There were a number of fatalities among patients with rather low cell counts. Following invasion of the virus into the central nervous system the cell count increases rapidly to maximal values, so that the first puncture usually reveals the severest pleocytosis. The polymorphonuclear cells usually predominate over the mononuclears in the first puncture. This predominance persists generally beyond the rapid decrease in the cell count during the first week and is replaced by a mononucleosis only after from two to four weeks. The Pandy reaction was positive in 71 cases, Nonne's reaction in 33. The first puncture disclosed an increase in the total protein content in only 42 per cent of the cases; subsequent punctures increased this figure to 50 per cent. The incipient cytoalbumin dissociation gradually changes into an albuminocytologic one. The increase in the total protein content is of no prognostic significance. The colloidal gold reaction is of limited prognostic significance. The sugar content of the cerebrospinal fluid was normal in 79 per cent of the cases. The supposed unfavorable prognosis of increased sugar content could be corroborated in only two of the nine fatalities. The rarity of decreased sugar values is helpful in the differentiation from other forms of meningitis, particularly tuberculous meningitis. There is no one aspect of the cerebrospinal fluid that is characteristic of poliomyelitis. However, positive findings in the cerebrospinal fluid, together with the history and clinical signs, permit the diagnosis of poliomyelitis during the meningitic stage. In paralytic forms positive observations in the cerebrospinal fluid are of differential diagnostic significance.

Anais Paulistas de Medicina e Cirurgia, São Paulo

42:459-544 (Dec.) 1941. **Partial Index**

*Sulfanilamide Through Arteries. J. Saldanha Faria.—p. 473.
*Electroanalgesia in Tuberculous Painful Dysphagia. E. C. F. Mondadori and F. Faria Pereira.—p. 501.

Sulfanilamide Through Arteries.—Saldanha Faria advocates the arterial route for administration of sulfanilamide in local infection of extremities. The injection is made into the main artery of the limb, into the radial in the case of infection of the hand and forearm, into the subclavian above the upper border of the clavicle in infections of the arm, and into the femoral artery at the base of Scarpa's triangle in infections of the legs. The injection is made slowly with a 6 cm. needle of the type used for lumbar puncture. The injection is made in the direction of the blood stream. After the injection the needle is quickly withdrawn and the point of injection is compressed for a few minutes. The injection is harmless. It produces a local analgesic effect and is not accompanied by unpleasant general reactions or vasomotor phenomena. Indications for intra-arterial injections of sulfanilamide are local infections of the extremities, erysipelas, acute and subacute lymphangitis, abscess, infected trauma, chronic ulcer, osteomyelitis, wet gangrene, compound fractures and acute and subacute arteritis. The earlier the administration of intra-arterial injections of sulfanilamide the more rapid and better the effect.

Electroanalgesia in Tuberculous Painful Dysphagia.—Mondadori and Faria Pereira direct attention to Grain's method of "electroanesthesia (iodine ionization) of the larynx" and the value of the procedure in the therapy of acute painful swelling in tuberculous laryngitis. The metallic electrodes of steel and tin, respectively, are bent to the form of the throat and back of the neck. The concave part of each electrode is filled with a thick layer of cotton. The anterior electrode is soaked in a 2 per cent potassium iodide solution and the posterior one in water. The electrodes are firmly applied to the throat and back of the neck by means of an elastic bandage. A galvanic current of 12 milliamperes is passed through the electrodes for thirty minutes. Pain stops completely within the first fifteen minutes of the treatment. It reappears within or after twenty-four hours. In either case the treatment is repeated only when pain recurs. The intervals of recurrence of pain after the first twenty-four hours rapidly increase from several days to several weeks. All patients can resume normal feeding immediately after the first treatment. The treatment controls pain permanently without any effect on the course of the tuberculous laryngeal lesions. Edema of the larynx is the only contraindication. Administration of local and inhalation anesthesia and local trauma of any degree are prohibited, as they nullify the effects of electroanalgesia. The treatment is painless, harmless and simple. It gives good results in all cases regardless of the stage and extension of the involvement.

Arquívos de Biología, São Paulo

26:1-28 (Jan.) 1942. **Partial Index**

*Therapeutic Abortion and Malignant Endocarditis Lenta. I. Taddeo.—p. 16.

Therapeutic Abortion and Malignant Endocarditis Lenta.—Taddeo stresses the inadvisability of inducing abortion in women with heart disease, especially in the presence of a history of rheumatic fever. Abortion may be the cause of Streptococcus viridans infection and consequent development of a malignant endocarditis lenta due to the passage of bacteria from the operative wound to the blood and the predisposed heart valves. Pregnancy in women with heart disease can be carried to full term if the patients are under constant medical care. Abortion is indicated only in exceptionally rare cases of grave heart disease in which cardiac insufficiency appears in the first three months of pregnancy and cannot be controlled. The author prefers high cesarean section with sterilization of the patient to abortion. A case of malignant endocarditis lenta after abortion in a woman with heart disease of rheumatic origin is reported.

Revista Española de Tuberculosis, Madrid

10:559-610 (Oct.) 1941. **Partial Index**

*Tuberculin Tests and Roentgen Examinations of Thorax of 1,462 Young Men. A. Alemany Selfa and A. Gómez López.—p. 559.

Tuberculin Tests and Roentgenograms.—Alemany Selfa and Gómez López performed tuberculin tests and roentgen studies on 1,462 apparently normal young men between the ages of 20 and 27. The Pirquet tuberculin skin reaction was positive in 1,349 men. The Mantoux intradermal test was performed on the group of 113 men who gave a negative or doubtful tuberculin skin reaction to a dose of 0.1 cc. of 1:1,000, 1:100 and 1:10 tuberculin dilutions. Thirty-five men gave a positive reaction to the 1:1,000 tuberculin dilution, 18 to the 1:100 and 13 to the 1:10 tuberculin dilution. Negative reactions were observed in 47. Roentgenograms of the chest showed

tuberculous lesions in 11 cases. The disease was in a stage of evolution in 8 cases. There were residual tuberculous pleural lesions in 100 and residual tuberculous pulmonary lesions in 133. Allergy was more frequent in the city dwellers than in those who lived in the country, but the difference was small.

Revista Médica Peruana, Lima

13:561-640 (Oct.) 1941. **Partial Index**

Complicated Perforation of Uterus: Sigmoido-Uterine Fistula. C. Heraud.—p. 563.
*Nine Cases of Anxiety Neurosis Treated by Metrazol. F. Sal y Rosas.—p. 567.
Radiologic Examination of Gastric and Duodenal Ulcers. M. Arias Schreiber.—p. 577.

Anxiety Neurosis Treated by Metrazol.—Sal y Rosas employed metrazol in the treatment of neuroses. He found that the provoked attacks exert a favorable influence particularly on the symptoms of anxiety. Metrazol treatment was found to be extraordinarily efficient in anxiety neuroses, 8 of the 9 patients treated with it having had a more or less lasting remission. The 1 patient who did not respond proved subsequently more amenable to medicinal treatment and to psychotherapy. Not a single case of aggravation was observed. In anxiety, as in other forms of neurosis, favorable results were obtained with injections that did not produce a convulsive effect. The neuroses of shortest duration reacted most favorably to metrazol treatment.

São Paulo Medico, São Paulo, Brazil

2:187-248 (Dec.) 1941. **Partial Index**

*Determination of Sulfanilamide in Bone Marrow: Considerations on Origin of Sulfanilamide Neutropenia from Changes of Hemogram and Myelogram. L. Ayres and D. Pedroso.—p. 187.

Sulfanilamide in Bone Marrow.—Ayres and Pedroso studied hemograms and sternal myelograms in 3 cases in the course of sulfanilamide therapy and after and made quantitative determinations of the sulfanilamide in the venous blood and in the sternal marrow. They found that sulfanilamide is stored in the bone marrow. The amount in the bone marrow is twice that in the venous blood for more than two or three weeks after discontinuation of the treatment. The time of "delay" for therapeutic action of sulfanilamide, when small doses of the drug are administered, is time necessary for the accumulation of the drug in the bone marrow. Sulfanilamide impregnates the protoplasm of the neutrophilic leukocytes, which are the carriers of sulfanilamide in the blood. Sulfanilamide impregnation of the bone marrow tissue results in a greatly retarded maturation of erythroblasts and myelocytes with consequent development of peripheral erythropenia and neutropenia. The bone marrow is a good reservoir for sulfanilamide as well as tissue capable of conveying the drug to the blood by the neutrophil leukocytes. This suggests the advisability of injecting sulfanilamide into the sternal bone marrow to obtain rapid results.

Semana Médica Española, Madrid

4:333-364 (Oct. 11) 1941

*Treatment of Chronic Osteomyelitis and Immunotransfusion. M. Gómez-Durán.—p. 333.
Fractures as Complications of Convulsion Therapy. A. Prieto Vidal and I. Lopez Saiz.—p. 342.
Psychology of Patients with Biliary Disease. F. Fernández Martínez.—p. 351.
Present Status of Syphilis in Spain in 1941. E. Alvarez Sainz de Aja.—p. 355.
Oxycephaly and Mental Deficiency: Difficulties of Neuropsychologic Diagnosis. M. Schachter, M. Wahl and S. Cotte.—p. 358.
*Consideration of Nutritional Value of Oysters. C. Blanco Soler.—p. 360.

Immunotransfusion in Chronic Osteomyelitis.—According to Gómez-Durán, surgical treatment does not always effect a cure in fistulous osteomyelitis. Various considerations indicate immunotransfusion as a complementary treatment. Chronic osteomyelitis causes grave disturbances in the serum proteins, and this makes the transfusion of plasma proteins advisable; the use of vaccine and chemotherapy is likewise helpful in osteomyelitis. Immunotransfusion preceded by vaccination and sulfanilamide treatment of the donor combines these different factors. The author considers immunotransfusion advisable as a complementary treatment after a surgical intervention and as the only treatment in cases of diffuse infection without sequestrum formation in which operation is not indicated. He employs it in practically all cases of osteomyelitis complicating fractures. The immunotransfusion is given within a week after the surgical intervention and is followed by the occlusive treatment of Orr.

Nutritional Value of Oysters.—Blanco Soler states that the popular belief that oysters should not be eaten during the months without an r (May, June, July and August) is unfounded, except that their nutritive value is slightly less at this time. Oysters are rich in protein and in amino acids and compare favorably with meat and eggs. They also contain readily assimilable mineral salts, such as copper, manganese, calcium, iron and iodine. Green oysters contain lecithin, which provides phosphorus in an advantageous form. Carbohydrates are present as glycogen. Vitamins A and D are present in abundant quantities and B, C and G in appreciable amounts. The digestibility of raw oysters compares with that of raw eggs or milk; cooked oysters remain in the stomach somewhat longer. Because of the high iron, manganese and copper content, oysters have long been recommended for anemia. That eating oysters results in regeneration of the blood has been demonstrated in experiments on rats. In pernicious anemia, oysters can be estimated next to liver. The author recommends the combination of liver therapy with the eating of oysters, the more so since they stimulate the appetite when eaten before a meal; furthermore, they increase the production of the gastric and pancreatic juices. Oysters influence the regeneration of hemoglobin more than the augmentation of the erythrocyte count. In anemias and in hepatic disorders accompanying them the glycogen content of the mollusks and their richness in diastases should not be forgotten. The concurrence of vitamins A and D and of iodine makes them recommendable for use in rickets. Because of their high vitamin content oysters have been recommended also in the treatment of scurvy and of pulmonary tuberculosis. The vitamin C content of oysters is probably explained by the presence of this vitamin in the aquatic vegetable matter which they consume.

Chirurg, Berlin

13:33-64 (Jan. 15) 1941

Surgical Interventions in Gunshot Wounds of Pelvic Bones. C. Reimers.—p. 33.
*Treatment of Infected Wounds with Potassium Permanganate-Boric Acid Solution and Powder. B. von Mezö.—p. 43.
*Potassium Permanganate-Boric Acid Powder in Wound Treatment. I. Györffy.—p. 45.
Shearing-Off Fractures of Tuber Calcanei. F. Jimeno Vidal.—p. 47.
*Esophageal Stricture After Diphtheria: Continuous Dilatation. F. Weigand.—p. 51.
*Synovial and Xanthomatous Tumors. H. C. à Wengen.—p. 55.

Treatment of Infected Wounds with Potassium Permanganate-Boric Acid Solution and Powder.—Von Mezö demonstrated that combination of ineffective and weakly acting solutions may increase the bactericidal action without injury to the tissues. Finely powdered boric acid and potassium permanganate, mixed in the ratio of 100 Gm. of boric acid to 0.8 or 1 Gm. of potassium permanganate, were found in animal experiments to be well tolerated when applied to wound surfaces. The author first thoroughly cleanses the wound by irrigation with a solution of potassium permanganate-boric acid (potassium permanganate 1:4,000 in 3 per cent solution of boric acid). Then the wound is dusted with the aforementioned powder and is sutured in layers over drainage tubes. This treatment was found especially effective in the treatment of open fractures; 15 of 19 healed without fever. In 2 cases reduction had been done elsewhere without careful cleansing of the street dirt contaminated fracture ends. In both of these putrefaction ensued and in 1 of them a gas phlegmon developed. Renewed reduction and application of generous amounts of the powder mixture arrested the process. The patient was cured. The potassium permanganate-boric acid powder is especially effective in the treatment of anaerobic infections. The powder proved effective in severe cases of appendicitis, in renal operations and in cerebral abscess. While as much as 30 Gm. of the powder can be

used without harmful effects, such large quantities are rarely required. The powder dissolves at once in the tissue fluids after being dusted on. It does not precipitate the protein; the cellular function is not impaired; its solubility in lipoids facilitates deep penetration. The bactericidal action is intensified by the fact that tissue fluids pass toward the concentrated salt solution on the surface; this carries the pathogenic organisms toward the surface, where they are killed. The author recommends this treatment for war injuries.

Potassium Permanganate-Boric Acid Powder in Wound Treatment.—Györffy states that the potassium permanganate and boric acid mixture of von Mezö represents an intensification of the effects of the two. The mixture is especially effective in the treatment of crushed, contaminated and infected wounds. A culture of a platinum loopful of wound secretion of a contaminated foot wound yielded 68 bacterial colonies; three hours after application of the powder mixture only 7 colonies were obtained and after an additional three hours the culture of 5 specimens yielded not a single living micro-organism. Control experiments with boric acid powder (without admixture of potassium permanganate) disclosed that it alone is incapable of exerting an adequate bactericidal action. Control tests with pure potassium permanganate powder could not be made because of possible tissue damage. It was ascertained also how the mixed powder acts on pure staphylococcic and streptococcic cultures. All bacterial growth disappeared from an agar plate after the powder was dusted on, whereas some organisms still survived twelve hours after boric acid alone was applied to the plates. Györffy concludes that the potassium permanganate-boric acid powder is valuable in the treatment of contaminated traffic and war wounds.

Postdiphtheric Esophageal Stricture. — Postdiphtheric esophageal stricture is rare, probably because diphtheria with esophageal involvement is usually fatal. Weigand reports the history of a boy aged 9 in whom diphtheria was followed by difficulty in swallowing. After a year the condition had become severe. Roentgenologic examination disclosed extreme narrowing of the esophagus. A Witzel fistula was made, which permitted adequate feeding. A urethral cystoscope was introduced through the fistula, and with some effort it became possible to pass upward a slender ureteral catheter. A thin silk thread was fastened to the catheter and pulled upward through the esophagus. The two ends, the one coming from the mouth, the other one from the fistula, were knotted together. Every second day a new thread was added and pulled through. Later the threads were replaced by a smooth cord. Finally thin Nélaton catheters were used for dilation. As their size increased, the catheters were left in place during the night. During the day only a thread was left in place. After three months of treatment the boy was again able to take fluids through the natural passage. After fourteen months of treatment all foods could again be taken by mouth, but the fistula was kept open for a while. Dilation was continued twice a week, and this was followed by dilation with English bougies. Roentgenologic examination revealed that the esophagus was again normal in size. Although continuous dilation requires much time and much patience, it is to be preferred to a premature surgical operation. Dilation is superior to a plastic intervention.

Synovial and Xanthomatous Tumors.—Wengen describes a xanthomatous synovioma of the elbow joint in a youth aged 18 who three months previously had knocked his elbow against an iron press. A mild, painful swelling appeared on the extensor surface two days later. It subsided in two weeks but reappeared after a month. A slightly fluctuating swelling almost the size of a plum was present between the olecranon and the lateral condyle. Active and passive movements were impaired. Roentgenologic examination disclosed no pathologic changes, and exploratory puncture was negative. At operation under local anesthesia a grape shaped, pedicled, yellowish brown tumor, 7 by 5 by 3 cm., was removed from the radial side of the olecranon; it was attached to the inner surface of the articular capsule. Microscopic examination revealed spindle shaped connective tissue strands, partly in reticular arrangement and traversed by capillaries. At other sites there were xanthoma cells with hemosiderin deposits. There were no signs of malignancy. The pathologic-anatomic diagnosis was epulis-like tumor of the synovia with xanthoma formation and signs of old hemorrhages. The postoperative course was uneventful, and a follow-up examination nine months later disclosed no abnormalities. Opinions differ widely regarding synoviomas. They have been designated as gigantocellular fibrosarcomas, endotheliomas and gigantocellular sarcomas with hemosiderin. The etiology of synoviomas is still obscure; age seems to play no part; they are twice as frequent in men as in women. The knee is the most frequent site, and fingers and metatarsal joints next. Synoviomas are resistant to irradiation, making surgical treatment advisable. The synovioma oscillates between fibroma and sarcoma. It greatly resembles brown tumor or epulis. If a synovioma shows signs of malignancy, two thirds of those operated on die within five years. In the absence of malignant degeneration the postoperative life expectancy is not decreased. The reported case is noteworthy because of the concurrence of a synovial tumor at a rare site with xanthomatous formation. It has long been disputed whether xanthomas are true blastomas or granulation formation. Traumas, even slight ones, and metabolic disturbances may be eliciting factors. At present blastomatous genesis of xanthomas is accepted beside a granuloma theory. There is so far no uniform conception regarding the mode of development or the character of synoviomas and xanthomas.

Monatsschrift für Kinderheilkunde, Berlin

85:313-444 (Feb. 5) 1941. **Partial Index**

*Further Contribution to Prophylaxis of Measles. H. G. Huber.—p. 313.
*First Case of Kala-Azar in Hungary. J. Geldrich.—p. 332.
Studies on Eczema in Infants. P. Woringer.—p. 348.
Feeding of Infants According to Bessau. H. J. Keller.—p. 366.
*Therapy of Epidemic Meningitis. Gerda Oetker.—p. 374.

Prophylaxis of Measles.—Huber describes an epidemic of measles among children of German families returning from Volhynia and Galicia. The psychic shock of the migration, one sided and inadequate diet and lack of natural immunity could have been factors in the severity of the complications and the high mortality rate he mentions. Children sharing the camp with those who had contracted measles were subjected to a prophylactic treatment either with a preparation of retroplacental blood or with one of placental blood. It was observed that the retroplacental blood extract was about as effective as serum from adults, but it had the advantage that it is always available. To be more effective it may be given in considerably higher doses. The prophylactic extracted from placental blood produced somewhat better results than did the retroplacental blood extract, but the protective effect was not quite as good as earlier reports had indicated. This might be explained by the fact that the placental extract is not standardized for its prophylactic activity and that its content of active substances varies. Both substances are of value in the prophylaxis of measles, but the placental extract is somewhat more effective than the retroplacental blood preparation.

First Case of Kala-Azar in Hungary.—According to Geldrich, the infantile form of kala-azar or Leishmania infantum occurs in the Mediterranean countries but is practically confined to the coastal regions. In Hungary it has as yet not been observed, although the disease was watched for by pediatricians and internists, particularly during the years after 1920, when numerous cases were reported in Italy. The case reported is the first encountered in Hungary. The splenomegaly, hepatomegaly, intermittent fever and the characteristic blood changes led to the diagnosis of kala-azar, and the demonstration of Leishmania donovani in the splenic punctate corroborated it. Intravenous injections of neostibosan (a pentavalent antimony compound) were given, beginning with 0.03 Gm. and increasing to 0.07 Gm., 0.1 Gm. and finally to 0.2 Gm. The injections were given every second or third day. In all the child received 1.2 Gm. of neostibosan. The effects of the treatment became apparent after the fifth injection, when the fever subsided. A follow-up examination after seven months disclosed that the splenomegaly and hepatomegaly had completely disappeared and that the child can be considered cured.

Therapy of Epidemic Meningitis.—Oetker presents a survey of 114 cases treated at the Magdeburg clinic since 1935. The results of meningococcic serum therapy were unsatisfactory. Blood transfusion was extremely helpful as an adjuvant to other treatments. Repeated withdrawal of cerebrospinal fluid and subsequent air filling proved of value in older children, but in children under 2 years of age the results were unsatisfactory. Chemotherapy with azosulfamide was tried but was given up because no evident results were obtained. Other sulfonamide preparations tried more recently were ulirom (dimethyl-disulfanilamide) and sulfapyridine. The therapeutic effects of uliron did not come up to expectations, but sulfapyridine proved highly effective, even in doses which are far exceeded today. It is to be expected that the larger doses of sulfapyridine will produce even better results.

86:1-138 (March 12) 1941. Partial Index

Studies on Edema in Infants. P. Woringer.—p. 1.
Whooping Cough Attack. A. Peiper.—p. 17.
*Hemorrhagic Diathesis in Congenital Pyloric Stenosis (Hypoprothrombinemia). A. Wallgren.—p. 32.
Modification of Quick's Method of Prothrombin Determination. J. Lehmann.—p. 44.
*Duodenal Ulcer in Infants. Dorothea Krafft.—p. 49.
*Scalds and Burns in Children: Treatment. B. Fincke.—p. 73.
*So-Called Interstitial (Plasmacellular) Pneumonia of Prematurely Born and Weak Infants. W. Giesenbauer.—p. 111.
Sturge-Weber's Disease During Childhood. W. Goeters.—p. 122.
Antibodies of Scarlet Fever Convalescent Serum. G. Tamási.—p. 136.

Hemorrhagic Diathesis in Congenital Pyloric Stenosis (Hypoprothrombinemia).—Wallgren reports case histories which suggest that the hemorrhagic diathesis of children with congenital pyloric stenosis resembles that which occurs in the newborn. The coagulation time was determined in only 1 of the cases, and in that 1 it was retarded as in hemorrhagic diathesis of the newborn. The latter is due to hypoprothrombinemia, which in turn is the result of K avitaminosis. Hemorrhagic diathesis associated with severe diarrhea or other intestinal disturbance is likewise the result of prothrombin deficiency. As a result of intestinal disturbance, vitamin K is either produced or absorbed in insufficient quantities. This led to the assumption that the hemorrhagic diathesis of pyloric stenosis is likewise a manifestation of a deficient enterogenic production of vitamin K and of hypoprothrombinemia caused by it. The correctness of this assumption was supported by the therapeutic effect of vitamin K in a case of hemorrhagic diathesis in pyloric stenosis. The rapid arrest of the hemorrhage without a simultaneous improvement of the nutritional state and in the presence of continued vomiting demonstrates that vitamin K deficiency is a factor in causing the hemorrhage. The author reports cases of pyloric stenosis in which repeated prothrombin tests demonstrated hypoprothrombinemia which could be counteracted by vitamin K. The hypoprothrombinemia and the resulting hemorrhagic diathesis are of clinical importance in pyloric stenosis. The author cites reports from the literature on postoperative hemorrhages in connection with Ramstedt's operation. Such reports have become less frequent since introduction of preoperative blood transfusions. The transfusions increase the prothrombin content and reduce the tendency to bleeding. He recommends routine administration of vitamin K previous to pylorotomy.

Duodenal Ulcer in Infants.—Krafft reviews the literature on duodenal ulcer in infants and describes 4 new cases that came for observation at the pathologic institute of a Munich hospital. The etiology of duodenal ulcer in infants has not been explained, but the increased incidence during the summer months is noteworthy. All infants who give even the slightest indication of ulcer should be carefully examined. Search for occult blood in the stools is particularly recommended. Information should be obtained regarding the hydrochloric acid values of the gastric juice. The concurrence of ulcer development with the onset of hydrochloric acid production deserves consideration.

Treatment of Scalds and Burns in Young Children.—Fincke reports observations on 95 children with scalds and 5 with burns. There were 26 fatalities. Complications in the form of severe dyspepsia, pneumonia, toxic impairment of the circulation, sepsis and anuria were the chief causes of death. Dressings with 10 per cent alcohol proved most effective for heat lesions of the first degree; those of the second degree were treated with cod liver oil ointment, tannin and a burn plaster containing bismuth, alum, zinc, amyl, ethyl aminobenzoate, boric acid and Peruvian balsam. The ointment treatment can be preceded by application of alcohol. In heat lesions of the third degree the cod liver oil ointment is more suitable than tannin. The scalds of the first degree and most of those of the second degree healed without scars. The other second degree lesions resulted in slight scar formation. All scalds of the third degree healed with central scar formation, irrespective of whether cod liver oil ointment or tannin was used. Two of the third degree lesions resulted in keloid formation, which were successfully treated with radium rays.

Interstitial Pneumonia of Children.—Giesenbauer states that in the disorder referred to as interstitial pneumonia occurring in young children and in prematurely born infants all lobes with the exception of their anterior portions show hepatic consolidation. The cut surface varies in color from light gray to gray-red. Suppurative bronchitis and pleurisy are usually absent. Microscopic examination discloses enlargement of the alveolar framework and a peculiar exudate in the lumen of the alveoli. The enlargement is due to a dense accumulation of lymphocytes and plasma cells and to a lesser extent to an increase in fibrocytes and fibroblasts. The exudate has a honeycomb appearance and resembles fibrin but does not take the same stains. There may be seen an admixture of exfoliated alveolar epithelial cells which frequently have fatty and lipoid granular inclusions and rarely inclusions of polymorphonuclear leukocytes. These observations are based on 46 cases which came to necropsy. All concern children less than 1 year old, 33 of which were prematurely born infants. There is agreement with regard to the microscopic appearances of this pulmonary disorder but no general agreement as to the differentiation from other forms of interstitial pneumonia of childhood, particularly from the congenital syphilitic pneumonia. Syphilitic congenital pneumonia and the interstitial (plasmo cellular) pneumonia are not identical in their microscopic characteristics. The peculiar type of exudate which is regularly encountered in the interstitial pneumonia is never seen in congenital syphilitic pneumonia. The thick concentric increase in fibers about the arterial and venous branches which is seen in the syphilitic form is never observed in the interstitial pneumonia. Noteworthy also is the comparatively slight increase in collagenic fibers in the interstitial form. The cause of interstitial pneumonia is unknown. Various types of bacilli have been encountered. It is not certain whether the disorder is infectious and whether it should be designated as pneumonia. The first case reported (Feyrter) was identified as "lymphoplasmocytoma," and in the more recent reports it is referred to as diffuse plasmocytosis of the lung, rather than interstitial pneumonia.

Geneeskundig Tijdschr. v. Nederl-Indië, Batavia

81:2621-2668 (Dec. 9) 1941. Partial Index

*Bacteria of Newcastle Dysentery Group from Feces of Patients with Symptomatology and Bacillary Dysentery in Netherlands East Indies. H. Esseveld, H. Beeuwkes and J. K. Baars.—p. 2622.
Stability of Iodine in Iodized Salt. A. G. Van Veen.—p. 2637.
Difficulty of Classifying Tumor of Humerus. W. M. Pruys.—p. 2642.

Bacteria of Newcastle Dysentery Group in Dysentery Patients in Netherlands East Indies.—According to Esseveld and his collaborators the mucous and bloody stools of patients with mild bacillary dysentery yielded on culture gas forming bacteria which, according to comparative examination, tally with the Manchester type of the Newcastle dysentery bacteria. The identity claimed by Scott and Boyd for the agglutinogen of the Newcastle dysentery organisms with that of the type described by Boyd (Boyd 88) could be corroborated by Esseveld and his associates. In 64 cases of dysentery on the East coast of Sumatra the feces yielded a bacterial strain of the Manchester type and no other pathogenic bacteria. Simultaneous bacteriologic tests on feces from patients without dysentery never disclosed the Manchester strain. In a single case the original Newcastle type was encountered.

Book Notices

Bellevue in France: Anecdotal History of Base Hospital No. 1. By Anne Tjomsland, M.D. Cloth. Price, $2.50. Pp. 251, with 82 illustrations. New York: Froben Press, 1941.

The publication of this book is timely. It should attract all who are interested in military hospitals in the war area. The Bellevue unit operated as Base Hospital No. 1 in Vichy, France, from March 12, 1918 to March 5, 1919. The author, avoiding all technical details, portrays the operation of the unit in a delightful manner with many anecdotes, photographs and maps. Fortunately, she had not only an unusual appreciation of the psychology of the hospital personnel, patients and the French people but also the ability to transmit her impressions to the reader.

One gains the impression that the friendliness of old Bellevue as expressed by an outgoing patient, "This is a friendly place," must have prevailed at Vichy, for the spirit of service prevailed. No task was too difficult, no hours of labor were too long if the comfort and welfare of the patients required it. The personnel and convalescent patients did new strange tasks remarkably well. One learned that when human life is to be salvaged and suffering relieved the best in all of us becomes evident. "There was not much need of discipline: we were learning that when mankind is pushed to extremities its behavior on the whole is pretty decent."

The unit, which was organized in the autumn of 1916, was accepted by the War Department in June 1917. The equipment, valued at more than $125,000, was purchased by funds donated by friends. It sailed on the *Olympic* Feb. 26, 1918, docked at Liverpool March 5, reached Le Havre March 8 and arrived at Vichy March 12. Vichy, or Aquis Calidis as it was called by the Romans, had been developed by them as a large fashionable water resort. Many years later Napoleon III restored it to its Roman grandeur as a famous summer resort. Elegant hotels were established with other necessary buildings and streets. Its railroad facilities and numerous hotels made it desirable as a location for a general hospital. The Bellevue unit first occupied ten hotels; during June and July ten more were added. During the week of July 16-22, 1,733 patients were admitted; in October, 3,206; the total treated was 16,077. Vichy became a hospital center, and Base Hospital No. 1 was joined by No. 19, No. 76, No. 115 and No. 109 and Convalescent Camp No. 9.

The staff of the hospital, which was organized for 500 patients but was treating several times that number, was depleted by calls for surgical teams needed in the combat area. With the author we visit such hospitals; we see the condition of the soldiers coming from the indescribable filth and mud of the battlefield and sense their frightful fatigue and near exhaustion. Finally "It seems that we had lived somewhere else, long ago, had gone through a breath-taking interval of startling events, blinding toil till you almost killed yourself, as well as spirited pleasures—and now we were going back to begin all over again. We should forever have a horror of war. But we also felt dissatisfied with civil life as we had known it."

Laboratory Diagnosis of Protozoan Diseases. By Charles Franklin Craig, M.D., M.A., F.A.C.S. Cloth. Price, $4.50. Pp. 349, with 58 illustrations. Philadelphia: Lea & Febiger, 1942.

This book is written to supply a work devoted entirely to laboratory methods for the diagnosis of diseases caused by protozoan parasites. It is the expressed desire of the author that it may be of real worth to physicians conducting their own clinical laboratories and to workers, especially technicians, in various laboratories preparing material for the diagnosis of these diseases. There are six parts devoted to the laboratory diagnosis of amebiasis and flagellate infections, leishmaniases, trypanosomiases, coccidiosis, malaria and balantidiosis. The laboratory methods in each part are given with exhaustive thoroughness. For example, under amebiasis there are chapters devoted to the morphology of the parasites, the collection and preparation of materials for examination, the diagnostic value of cultures, complement fixation and animal inoculations. Some of the methods described will probably be of more interest to the research worker than to the physician or technician interested in diagnosis, but the confusion that might result from the inclusion of so many technical variations is largely, if not entirely, eliminated by the "critique of diagnostic methods" which is appended to the consideration of each group of diseases. Specialists will probably question the criteria for including or excluding certain methods. Such criticisms, however, are matters of opinion and there is no doubt that the author has exhaustively and accurately presented the important laboratory methods. The book will undoubtedly be of value to laboratory workers.

La anestesia general intravascular: Trabajo galardonado con la medalla de oro de la R. A. de medicina, Madrid. Por el Dr. E. Perez Castro. Paper. Pp. 95, with 69 illustrations. Madrid: Ediciones Morata, 1941.

El nivel motórico (edad motora). Por el Dr. César Juarros, médico director de la Escuela nacional de anormales. Paper. Pp. 111, with 7 illustrations. Madrid, Barcelona & Buenos Aires: Ediciones Morata, 1941.

Diagnóstico y clinica de la tuberculosis infantil. Por el Dr. Georg Simon, médico jefe del Sanatorio infantil de Aprath. Traducido por los Doctores R. Navarro Gutierrez y F. Paz Espeso, directores de los dispensarios antituberculosos centrales de Buenavista (Madrid) y Guadalajara. Paper. Pp. 111, with 44 illustrations. Madrid: Ediciones Morata, 1941.

La esterilidad en la mujer. ¿Qué causas la originan? Por el Dr. Vital Aza, director del Sanatorio quirúrgico y Clinica de maternidad 'Santa Alicia,' Madrid. Paper. Pp. 110. Madrid: Ediciones Morata, 1941.

Difteria: Epidemiologia, diagnóstico, clinico, tratamento. Por el Dr. J. de Eleizegui Sieyro. Paper. Pp. 122, with 14 illustrations. Madrid: Ediciones Morata, 1941.

Personalidad y caracter: Estudio crítico. Por el Prof. Dr. M. Bañuelos, catedrático de la Universidad de Valladolid. Paper. Pp. 127. Madrid, Barcelona & Buenos Aires: Ediciones Morata, 1941.

La próstata y sus enfermedades. Por los Dres. A. y E. de la Peña. Paper. Pp. 93, with 16 illustrations. Madrid: Ediciones Morata, 1941.

Pérez Castro's book made the author the winner of the gold medal of the Royal Academy of Medicine of Madrid and of the degree of academic member of the academy, which the latter offered, by contest, for the best article on intravascular general anesthesia. This book contains chapters on the history of intravascular anesthesia and substances used, with special reference to the pharmacology, experimental and clinical results and accidents and contraindications of evipal soluble. The book ends with eight pages of bibliography.

Juarros' book is the result of observations of the author, who is a fellow of the Royal Academy of Medicine of Madrid and the head of the National School for abnormal children of that city. This book purports to show the relations between "motricity"— the motor state—and mentality in children. There are chapters on the value of Osebetzky's tests for intelligence and the motor state and of Osebetzky's collective tests for determining the motor state in relation to chronological age.

Dr. Simon's book is the result of observations as the head of the sanatorium for Diseases of Children in Aprath. The book is a compilation of several articles previously published by the author in German and a translation of the articles from German into Spanish, which was carried on by Drs. R. Navarro Gutiérrez and F. Paz Espeso, heads of the antituberculosis dispensaries of Madrid and Guadalajara respectively. There are different chapters on the frequency, diagnosis, differential diagnosis and clinical forms of pulmonary tuberculosis in children and also chapters on the complications and sequels of the disease.

Vital Aza's book issued from his work as head of the Santa Alicia Maternity Hospital of Madrid. The book contains chapters on the causes and social importance of sterility in women. There are several chapters on frigidity and the mechanical, functional, constitutional, endocrine, psychologic and pathologic factors of sterility. There are also chapters on maternity and foster motherhood, and on the role of syphilis and tuberculosis in sterility.

Eleizegui's book issued from experience as an officer of the Medical Department of Public Health of Madrid. This book is devoted to the discussion of the problems of epidemiology, diagnosis, clinical forms, therapy and prevention of diphtheria. The book ends with six pages of bibliography from modern literature.

Bañuelos' book is a review of various theories on hereditary, physical, psychic, sexual, environmental, educational and other factors which are in relation with personality and character and a critical study of all typologic classifications of

personality and character. It purports to show the psychobiologic roots and fundamentals of personality and character, the causes of radical changes and the feasibility of modifying changes and improving personality and character by determination, perseverance and good advice and example. Other aspects of personality and character also are discussed.

Peña's book purports to show modern trends which are of practical clinical value for the diagnosis and therapy of diseases of the prostate. There are several chapters on general study of latent, acute and chronic diseases of the prostate, differential diagnosis of fever from retention of urine, causes of diseases of the prostate and surgical therapy. The book ends with a chapter with formulas and therapeutic indications of use in clinical practice and a page of bibliography on the subject.

Textbook of Embryology. By Harvey Ernest Jordan, M.A., Ph.D., Sc.D., Professor of Anatomy and Director of the Anatomical Laboratories, University of Virginia, Charlottesville, and James Ernest Kindred, M.A., Ph.D., Professor of Anatomy, University of Virginia. Fourth edition. Cloth. Price, $6.75. Pp. 613, with 501 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1942.

First published in 1926, this textbook for medical students has now undergone its first extensive revision. An important addition to the descriptive material, which necessarily forms the bulk of the text, is much recent experimental and comparative material. This in part has been incorporated in the text, and in part is summarized in fine print at the end of the appropriate descriptive sections. Such material is particularly welcome in a field which is being actively investigated and in which new and significant contributions are continually being made. As is almost inevitable, some sections are treated more adequately than others. Since human development is primarily the object of the text, it would seem that in the discussions of early development, especially in presomite stages, more emphasis might be placed on the magnificent recent contributions to early primate development from the Carnegie Institution. Similarly the most basic aspects of fetal physiology, especially with respect to the respiratory and nervous systems, might well be included, perhaps even as an integral part of the text, which would be thereby enlivened. In this connection it is surprising that Windle's monograph on the highly interesting and important subject of fetal physiology is not mentioned. Nevertheless, those who have used this textbook for medical teaching will welcome this new edition, which is attractively bound and printed. Many new and useful illustrations have been added, but many of the retained line drawings are as crude and unattractive as ever, and some of the halftone reproductions are not up to the high standard set by modern morphologic textbooks.

Medico-Surgical Tributes to Harold Brunn: A Series of Essays on Various Aspects of Surgery and Medicine Written by His Pupils and Friends. Cloth. Price, $6. Pp. 571, with illustrations. Berkeley & Los Angeles: University of California Press, 1942.

A well deserved tribute to one of the leading surgeons of the Pacific Coast area becomes available in this volume from the University of California Press. In his statement in the book the editor of THE JOURNAL says "In the social, civic, educational and professional aspects of medicine in San Francisco, Dr. Harold Brunn has been a leader. His numerous contributions to the literature of scientific medicine are evidence of the place he has made for himself as a practitioner of medical science. Nevertheless he has found time in the midst of all this activity to stimulate innumerable young men, who hail him as their preceptor. Thus he has truly fulfilled the requirements necessary to be listed among the builders in medicine. He has built educational institutions, laboratories of research, hospitals and, above all, young men."

The book itself makes apparent the well merited character of the tribute. Statements from the president of the university, the dean of the medical school and its professor of surgery are supplemented by fifty-three essays running the gamut of progress in every field of medicine and surgery. Most of America's great surgical leaders are represented, and they are supplemented by reports of technical research in the laboratory and statements in the field of experimental medicine and the public health. The volume is supplemented by a bibliography of the writings of Dr. Brunn. It is printed and bound in a style adequate to its quality.

Neuroanatomy. By Fred A. Mettler, A.M., M.D., Ph.D., Professor of Anatomy, University of Georgia School of Medicine, Augusta. Cloth. Price, $7.50. Pp. 476, with 337 illustrations. St. Louis: C. V. Mosby Company, 1942.

This textbook is intended for medical students beginning the study of neuroanatomy. The first half is devoted to the gross morphology and topography, and the second to the microscopic anatomy of the nervous system (the author uses the phrase "neural system"). In both parts he has kept in mind the future needs of the student in his clinical studies and has also endeavored to clarify those aspects in which clinical students and interns have shown evidence of misunderstanding. The illustrations are worthy of special comment. They were made specifically for this book from original material prepared by the author. Schemas from other sources have been redrawn. Obviously no pains have been spared to make the illustrations as effective as possible in relation to the text. In addition to the aims mentioned the author has endeavored in the first part to emphasize aspects of importance in practical medicine and in the second part to help in establishing a sound functional point of view. He characterizes the work as a "bare outline for the fuller study required by the special fields of medicine." However, the average medical student in his clinical years rarely shows evidence of having mastered more than a small part of the ground covered in this volume. Thus the labor involved in organizing the bibliography, which comprises several thousand references and fills fifty-three pages, may not receive much appreciation. However, the book will be useful to many long past the undergraduate stage and they, at least, may find the bibliography helpful. This volume is a worthy addition to the various other excellent textbooks now available on the subject.

Economics of Social Security: The Relation of the American Program to Consumption, Savings, Output, and Finance. By Seymour E. Harris, Associate Professor of Economics, Harvard University, Boston. Cloth. Price, $5. Pp. 455. New York & London: McGraw-Hill Book Company, Inc., 1941.

Every phase of the economics of social security is exhaustively treated, and the relation of each phase to the most recent economic developments is discussed. The possible reactions of the large financial operations involved and their possible effects on savings, investment, wages, interest, price, consumption, finance, inflation and employment are discussed as related to all stages of the industrial cycle. The possibility of failure to meet security obligations in case of war is recognized. So thorough and basic is the work that its reading is essential to any real understanding of the multitude of problems involved. The reading is not easy. It assumes a familiarity with the writings of Keynes, Hansen, Wicksell, Joan Robinson and Pigou as well as of their predecessors, and none of the writers mentioned are easy of comprehension by those unfamiliar with economics. Any one engaged in the management or interested in the operation of social security will find that the effort required to master the book will be repaid by added ability to understand the problems involved.

Visual Outline of Psychiatry. By Leland E. Hinsie, M.D., Professor of Psychiatry, College of Physicians and Surgeons, Columbia University, New York. Oxford Medical Outline Series. Cloth. Price, $2. Pp. 109. New York, Toronto & London: Oxford University Press, 1941.

This little volume is one of a series of short outlines covering various aspects of medicine. The present psychiatric outline is systematically carried out and consists of five parts, the last being the glossary and index. The first part of the book deals with the organization of the mind. The second and largest part of it covers the psychiatric syndromes, including the psychoneuroses and psychoses, and the foruth part covers intellectual deficiency. As the latter part is only about three pages long, it is obvious that the problem of mental deficiency is much too sketchily done, a criticism that can be leveled at the whole volume: for instance, psychopathic personalities are covered in what amounts to one page. There is a definition which takes up about half of the section, and a four line description of the manifestations, one line on the course, and half a dozen lines on the treatment. It is difficult to see in just whose library this book would fit. It is obviously intended for the student, for it is heavily interleaved with blank pages for note taking, and there is a fairly good glossary appended to it; but it can neither replace nor adequately supplement conventional textbooks.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DETERMINATION OF PATERNITY OF A NEWBORN CHILD

To the Editor:—**Will you please send me information about any legally accepted method of determining the paternity of a newborn child? One of my patients is desirous of this information as soon as possible, and I would appreciate your cooperation.**

M.D., Canon City, Colo.

ANSWER.—Knowledge of the A-B group or the M-N type of blood of parents makes it possible to predict which blood groups or type children from this mating may or may not be. In the determination of the paternity this information can be used only as negative evidence unless all males, other than the one person in question, can be eliminated from consideration. If all men concerned in such paternity problems were falsely accused, the determination of the A-B group of mothers, presumed father and child gives the man in question a 16 per cent chance of being eliminated. An additional 18 per cent chance of elimination may be had by the determination of the M-N types. Thus, with the determination of both A-B and M-N the chances of exclusion are between 35 and 40 per cent. Such evidence is not universally accepted by courts. However, New York, Wisconsin and perhaps other states have enacted laws authorizing the courts to order such blood grouping tests in cases of questioned paternity. Details of technic and complete lists of possible groups and types in children born of parents with varied combinations of groups and types may be had in several standard works, such as Diseases of the Blood by Kracke, published by Lippincott, Textbook of Clinical Pathology by Kracke and Parker, published by Williams and Wilkins, and Blood Groups and Blood Transfusions by Wiener, published by Thomas.

ANTIPERSPIRANTS AND DEODORANTS

To the Editor:—**I have been consulted by some high school girls about the advisability of shaving under their arms, using deodorants and the kind of deodorant, if recommended.**

J. P. McGowan, M.D., Harlan, Iowa.

ANSWER.—If done carefully, there is no harm in shaving the axillary hair. Not all young girls need assistance from antiperspirants and deodorants. Their tendency to make much of slight difficulties of this sort should be discouraged, for an olfactory neurosis can cause much misery and is particularly hard to overcome.

Antiperspirants and deodorants are closely related, and it is hard in some cases to separate one from the other. The first measure of protection against body odor is frequent washing with soap and water to remove the products of perspiration which, by decomposing, furnish most of the odor. After this a mild lotion may be applied, such as salicylic acid 2.4 Gm., benzoic acid 4.8 Gm. and 50 per cent alcohol to make 120 cc., dabbed on the axillas frequently.

Another somewhat stronger lotion is solution of formaldehyde U. S. P. diluted 1:100 in alcohol. This cannot be used so often. Once or twice a day is often enough, but its effect is more lasting. Oxidation of the products of sweating is often tried by applying a wine red solution of potassium permanganate in distilled water. It is efficient but, if used in too great strength, turns the skin brown. Another oxidizer is the dusting powder recommended by Goodman (Cosmetic Dermatology, New York, McGraw-Hill Book Company, 1936, p. 438): zinc peroxide 1 Gm., benzoic acid 1 Gm. and talc to make 100 Gm. Other powders recommended by the same author are solution of formaldehyde 1 cc., thymol 1 Gm., zinc oxide 32 Gm. and talc to make 100 Gm., or magnesium carbonate 32 Gm., finely powdered alum 32 Gm. and talc to make 100 Gm. These may be dusted on after the bath. Goodman presents many other formulas.

In cases of pronounced axillary hyperhidrosis, stronger measures are necessary. Aluminum chloride, introduced into American dermatology by Stillians in 1916 (The Control of Localized Hyperhidrosis, THE JOURNAL, Dec. 30, 1916, p. 2015) is the strongest of these, effective in most cases, checking the excess perspiration and keeping it in check by moderate use. As the author warns, certain precautions are necessary to success. The 25 per cent aqueous solution recommended is acid and injurious to clothing, so that one must use care that the skin of the part has dried before putting on the clothes. If applied too often, it may act as a primary irritant. The author suggests applying it once every third day. After the effect has been obtained, an application once a week is usually enough to maintain the effect. It is very important to avoid washing the part with soap just before applying the lotion, for soap or any alkali counteracts its effect.

The most effective measure against hyperhidrosis is roentgen therapy. Unfiltered radiation may be given once a week in a dose of 75 roentgens, or once a month 225 roentgens may be administered. Two to six months' treatment may be necessary to effect a satisfactory decrease of sweating. When a decided decrease has been obtained, treatment should cease, for usually there will be a further lessening after the treatments have been discontinued. Later the effect will be less, but recurrences are not common (MacKee, G. M.: X-Rays and Radium in the Treatment of Diseases of the Skin, ed. 2, Philadelphia, Lea & Febiger, 1927, p. 547). The use of any irritant during or for three weeks after the end of the course of treatment is strictly enjoined. Soap and water followed by a bland dusting powder should be all that is allowed.

Persons who wish to be free from body odor should avoid excessive participation in foods containing onions or garlic. Eller (Body Odor, *M. Rec.* **154**:167 [Sept. 3] 1941) lists other foods and a number of drugs which may contribute odor to the perspiration.

Many persons advocate perfume to cover the body odor. Some perfumes, as Eller says, decompose under the influence of the perspiration and intensify the body odor. Care must be taken to choose one that will improve matters without having to be used in excess. Heavy perfume is as repugnant to some people as body odor.

TREATMENT OF ACUTE MORPHINE POISONING

To the Editor:—**Will you please indicate briefly the modern treatment of acute morphine poisoning? I did some research work on this subject thirty-five years ago. The results of that work demanded a radical change in the old treatment. That is why I make the request.**

Neal Kitchens, M.D., Warm Springs, Ga.

ANSWER.—Morphine is readily absorbed from the stomach and intestine and is then excreted again into the stomach, where it is again absorbed. As much as one third of the morphine given hypodermically has been recovered from stomach washings. It is for this reason that in the treatment or acute morphine poisoning the stomach should be washed.

As soon as the patient is seen the stomach is washed repeatedly with a solution of potassium permanganate, 0.5 Gm. of permanganate to the liter of water. This oxidizes the morphine to oxidimorphine, which is harmless. If permanganate is not available, a 5 per cent solution of tannic acid or a strong infusion of tea may be given. This forms an insoluble compound with the morphine and thus prevents absorption. Magnesium sulfate may be given to hasten the removal of the morphine from the intestine. Caffeine, either by mouth, intravenously or as a strong hot coffee enema, is a physiologic antidote. Nikethamide is given for stimulation. The patient is kept warm, and most authorities feel that the patient should not be allowed to go to sleep. If the patient lives for twelve hours following the ingestion of the morphine, the prognosis for complete recovery is favorable.

INFLUENCE OF FATIGUE ON ANEMIA

To the Editor:—**Are there reports in the literature of scientifically controlled experiments on the role of fatigue, either acute or chronic, in the production or maintenance of anemia? I have noticed in the past few years, since I have been stressing rest, that secondary anemias respond much more readily.**

L. A. Crowell Jr., M.D., Lincolnton, N. C.

ANSWER.—After brief exercise there is an increase in the erythrocytes in the peripheral blood apparently because of release of stored red cells into the circulation. After prolonged exercise in dogs there is an increased destruction of erythrocytes with slight lowering of the erythrocyte count and hemoglobin content of the blood. This is accompanied by an increase in reticulocytes and hyperplasia in the bone marrow.

It is quite possible that a patient with anemia due to blood loss or deficiency might recover more rapidly when at rest than while performing hard work.

References:

Broun, G. O.: Blood Destruction During Exercise, *J. Exper. Med.* **36**: 481 (Nov.) 1922; **37**: 113 (Jan.), 187, 207 (Feb.) 1923.

Steinhaus, A. H.: Chronic Effects of Exercise, *Physiol. Rev.* **13**: 103 (Jan.) 1933.

A PATERNITY PROBLEM

To the Editor:—A young married woman has a regular twenty-eight day cycle. She usually can tell by slight cramps when ovulation takes place. Just before marriage (a sudden event) she had a normal period. On the sixth and eighth days of her cycle she had intercourse. On the fourteenth day she noted the usual symptoms of ovulation. On the twenty-first day of the cycle she was married and had intercourse with her husband (a different man). The following menstrual period did not take place. The patient is worried that she may be pregnant by the first man rather than by her husband. Unless I can offer her definite assurrance to the contrary I feel sure she will resort to illegal abortion. My own reading and knowledge indicate that she is more likely pregnant by her husband. I should appreciate a prompt reply so that I may avert a possible tragedy.

M.D.

ANSWER.—The exact day of ovulation in women cannot be determined with certainty except in a few who have characteristic intermenstrual pain. Daily vaginal smears may be used to determine ovulation in some women, but generally there is nothing characteristic of the process. Ovulation usually occurs fourteen days before the following menstrual flow. This interval appears to be fixed, but the lapse of time between the onset of bleeding and subsequent ovulation may vary considerably. Furthermore, it is known that an ovum usually lives only about twenty-four hours and seldom survives more than forty-eight hours. Spermatozoa, however, generally are capable of fertilization for forty-eight hours and in some instances perhaps longer. However, nearly all these data are based on what occurs in animals; hence they may not be entirely applicable to human beings. Theoretically, coitus on the twenty-first day should not lead to fertilization in a woman who has a twenty-eight day cycle, but this does not mean that it is impossible for a woman with a fairly regular twenty-eight day cycle to ovulate on the twentieth or the twenty-first day. If ovulation does take place late in a menstrual cycle and pregnancy does not supervene, the onset of the following period is generally delayed.

In order for the first man to have impregnated the patient one must infer that ovulation occurred some time between the fifth and the ninth day of the cycle or that this man's sperm retained their ability to fertilize an ovum for at least six days.

Since there are so many uncertain factors concerning ovulation in the human being and since it is definitely possible that the husband may be responsible for the pregnancy, the patient should not have her pregnancy terminated.

PROBABLE SYPHILITIC PORTAL CIRRHOSIS

To the Editor:—A woman aged 41, who states that she had a positive Wassermann reaction for several years and has received forty-six injections of neoarsphenamine and at least an equal number of bismuth injections, complains of a gradual enlargement of her abdomen over a period of six weeks. The patient is thin. There is no dizziness, cyanosis or jaundice. The pupils are round and react. The nose and throat are normal. The heart and lungs are apparently normal. The abdomen shows signs of fluid; no masses are palpable, either liver or spleen. There are external and internal hemorrhoids, and edema of both legs is present. The urine is normal except for a trace of albumin. A gastrointestinal roentgenologic study revealed nothing of note except the presence of fluid in the abdominal cavity. A gallon of clear fluid was obtained by paracentesis and, by all laboratory procedures, proved to be a transudate. The Kline reaction was weakly positive and the Kolmer complement fixation reaction strongly positive. The albumin globulin ratio was 1:7 and a Takata-Ara test was positive. There is a secondary anemia. In view of the probability that this is a syphilitic cirrhosis, is the use of bismuth and arsenic compounds contraindicated? What would be the proper course of treatment for a case of this type?

B. E. Lachman, M.D., Oil City, Pa.

ANSWER.—We would agree that the patient has a portal cirrhosis; whether it is syphilitic or not is difficult to say. No mention is made of an alcoholic history. The patient has already had sufficient antisyphilitic therapy in the form of arsenicals and bismuth compounds. Wile, years ago (A Therapeutic Paradox, *Am. J. M. Sc.* **164**:415 [Sept.] 1922), pointed out that in syphilitic hepatitis the patient may apparently respond brilliantly to the arsenical therapy only to get worse and die later of a cirrhosis.

Certainly the physical findings, as well as the reversed albumin globulin ratio 1:7 and the positive Takata-Ara, would speak in favor of a portal cirrhosis.

In the way of therapy there would be no harm in the use of potassium iodide; in fact, it might be of definite value, and, if any heavy metal is employed, reliance should be put on soluble mercury injections, e. g. mercuric succinimide intramuscularly three times a week.

Paracentesis should be done as indicated. The patient should be allowed no alcohol. Her diet should consist principally of carbohydrates, though milk is allowed. Fatty foods, eggs and meat should be restricted. Salt in the diet should be restricted, and saline cathartics are in order.

EDEMA OF EYELIDS IN SINUSITIS

To the Editor:—What is the mechanism responsible for edema of the eyelids in sinusitis? Is it an allergic manifestation or mechanical, resulting from congestion? For years I have suffered from ethmoiditis and have tried everything recommended—roentgen rays, vaccines, Proetz and other local treatments, surgery (turbinectomy, antrotomy, submucous resection, anterior and posterior ethmoidectomy—all on the left side) but not complete exenteration. For about a year I have had frequent attacks of edema of the right eyelid, which come on at night and slowly subside. These are getting more frequent, more severe and troublesome, and now there is always slight edema between attacks. There is rather profuse discharge from both nostrils of greenish yellow pus; the culture shows Staphylococcus aureus. Autogenous vaccine does not relieve. What is the prognosis and best treatment? Should radical surgery be resorted to?

M.D., Hollywood, Calif.

ANSWER.—Without examining the patient, one's answer to the above query is apt to be incomplete. The most likely cause of the edema of the eyelids is a chronic conjunctivitis secondary to an ascending infection from the nose by way of the lacrimal passages. There may be an allergic factor present; in fact, in many cases of protracted ethmoiditis the chronicity is due to a secondary infection based on progressive allergic changes. It is not likely that a low grade orbital periostitis secondary to sinusitis would come and go just in the manner described. This would apply also to congestive changes in the orbit. Treatment should be dependent on the judgment of a competent rhinologist. Every attempt including the use of cutaneous tests should be made to determine the presence of an allergic factor and to remove it if possible. Because there seems to have been a fair trial of the more conservative measures, a thorough exenteration of the ethmoid labyrinths, preferably by external approach, should be seriously considered. If there is no other sinusitis present such an operation, well done, offers a minimum of risk and a good possibility of satisfactory relief.

SENSITIVITY TO DUST AND VACUUM CLEANERS

To the Editor:—Many of my patients are sensitive to house dust. Which type or make of vaccum cleaner will cause the least dispersion of fine dust particles and bacteria into the air? Is the so-called tank type of cleaner more efficient as an air filter than the conventional upright models?

M.D., New York.

ANSWER.—All the vacuum cleaners at present on the market cause some dust dispersion. However, the tank type, if well made, is more efficient than the type with the unenclosed bag. While some of the tank types have cloth filters which are advertised as highly efficient, the filtering efficiency is far from good. It is therefore advisable for the patient sensitive to dust to be out of the house while vacuum cleaning is being done. If this is not possible, the patient may wear a mask.

COMBINED VACCINATION OF CHILDREN

To the Editor:—In the use of combined diphtheria toxoid and tetanus toxoid, a dose of 1 cc. to be repeated in three months is advised. Would there be any harm in either vaccinating or giving the child pertussis vaccine during that three month period?

Samuel J. Bolonik, M.D., Chicago.

ANSWER.—Harm should not result from the contemplated program to vaccinate against smallpox or to administer pertussis vaccine within the period specified. However, the different immunization procedures should be properly spaced to avoid the possibility of accumulated reactions.

It would not be advisable to inject immunizing substances for other diseases while a local reaction from smallpox vaccination was present because of the added discomfort that the patient might experience.

CORBUS-FERRY CUTANEOUS TEST FOR GONORRHEA

To the Editor:—What is the value of Corbus-Ferry gonococcus filtrate as a diagnostic procedure in gonococcic infections?

William F. Putnam, M.D., Lyme, N. H.

ANSWER.—The value of the cutaneous test with gonococcus filtrate (Corbus-Ferry) is questionable. Even in the hands of those who have had a great deal of experience with it a definite diagnosis cannot be established. The test may be an aid in the diagnosis of gonococcic infection but the clinical history, smears and culture are the best criteria. The filtrate is of no value therapeutically and has been ruled out acceptable for N. N. R. by the Council on Pharmacy and Chemistry of the American Medical Association.